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**“ Emerging trends in education:
A fusion of Pedagogy, Management, Robotics and STEAM”**

Preface

ICOMEU 2022 was the fourth in a series of successful international conferences on the *Management of Educational Units* which started back in 2018. The conference series was intended to provide a unique opportunity for educators and researchers from universities, schools, cultural institutions, businesses, industries and other private and public agencies around the world to share and discuss their innovative practices, research initiatives, and educational tools that advance the management of educational units, with the emphasis this year put on STEAM education. The conference was jointly organized by two postgraduate programs, the M.Sc. on '*Management of Educational Units*', offered by the Department of Business Administration, Marketing and Tourism, and the M.Sc. on '*Robotics, STEAM and New Technologies in Education*', by the Department of Industrial Engineering and Management, both at the International Hellenic University, Greece. ICOMEU 2022 was held virtually from the 21st to the 23rd of January 2022, due to the threat of the Covid-19 pandemic.

The papers presented in the conference have highlighted the role of STEAM education in promoting global competencies and soft skills and, also, its contribution to the positive youth development. Moreover, they have emphasized the use of STEAM in teaching international students, enhancing adult learning, promoting learning in marginalized groups and introducing humanities and democratic education in the curricula. The conference tried to address all five key principles of project-based learning through STEAM: content integration, problem-based learning, inquiry-based learning, design-based learning, and collaborative learning. Overall, the conference papers covered a wide range of topics such as: Organizational challenges for education, Management of educational institutions, Staff training – evaluation & assessment, Policy and governance, Pedagogy and innovation, Innovative teaching models, Homework & Flipped learning, Evaluation and quality in education, Standardized testing, STEAM education, Educational robotics, Educational software, Virtual reality.

It became clear that STEAM education leads to the formation of multicultural consciousness and promotes engaging learning. It may highlight multiple aspects of educational innovation, and as some papers have demonstrated, it can be used to enhance environmental consciousness and attitudes towards sustainable development and tourism.

It has been also shown that STEAM education can be efficiently integrated within the intricate student and teacher evaluation and assessment procedures. Furthermore, it may promote alternative techniques that raise cultural awareness, while developing reading & vocabulary skills for pupils. For this reason, it is fully incorporated within the Human Capital, Social Involvement and Policy Dialogue of the EU Digital Education Action Plan (2021-2027). In this sense, it establishes a two-way interaction scheme with European Programs e.g. under the E-Twinning and Erasmus⁺ umbrellas.

STEAM provides an integrated approach to education that is infused with Science, Technology, Engineering, Art, and Math. Each component supports the others equally to offer students access to a rigorous program of study that demands the hands-on engagement, critical and creative thinking, and the skills required for career readiness. The Arts component offers an integral, innovative element to STEAM through engagement in the creative process and an understanding of how art and design principles, concepts, and techniques influence the effectiveness of solutions to problems. Needless to stress the importance of internet, digital

libraries and STEAM tools for distance and mobile learning, especially under the Covid-19 quarantine conditions, as presented in the conference. It was concluded that it may also contribute significantly to the organizational challenges for education such as the e-management of schools, leadership and human capital management and, on the whole, to the *Total Quality Management* procedures. Afterall, learning during the COVID-19 Pandemic has been challenging for us all. STEAM education is adaptable in such an environment, with automation, web design, and virtual interactive design applications being only a few STEAM areas which can offer students valuable learning/engagement opportunities.

STEAM education can also support cross-discipline synergies e.g. by highlighting the contribution of the history and philosophy of science and ethics to the teaching of natural sciences, as factors of effective and innovative learning. It also contributes greatly to the development of digital and collaborative skills both for teachers and pupils and, additionally, it is also reported to alleviate stress and promote positive psychology for teachers and students alike.

It also plays a significant role in inclusive learning and special needs learning by providing a plethora of alternative technological tools. One should also focus on its importance in science teaching, robotics, geographical information systems, music, foreign language teaching and sports education, as it was presented by several authors. It may be considered as a vehicle for innovation, bringing the concepts and practices of the 4th industrial revolution to the classroom. And some alternative subjects such as disaster safety education, educational games and programming learning environments can be easily introduced to the classroom using experiential teaching techniques, as it was discussed in some papers. STEAM learning was found especially useful in evening schools, vocational training and lifelong learning, playing a significant socio-cultural role.

As it was stressed by our keynote speaker, STEAM education should be approached by means of an integrated interdisciplinary computational methodology. Moreover, as concluded from the presentations and the discussions throughout the conference, history, fine arts and liberal arts in general complement STEAM learning in promoting a holistic, multicultural, multifaceted educational experience.

Our primary aim was to provide opportunities to examine unique educational management stories and to highlight STEAM practices partially hidden, and not yet fully conceived. To uncover the administrative, pedagogical and psychological effects of the Covid-19 pandemic. Afterall, research in STEAM Education has the potential to transform lives, re-imagine education, and respond to some of the most complex pedagogical and administrative issues both at local and global levels. We hope you will be able to discover all these and much more in the book in hand.

With our Best Regards,

Panagiotis Tzionas

Chairman of the Scientific Committee

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Table of Contents

STEM-ADULT EDUCATION.....	1 -
THE USE OF SOCIAL MEDIA IN DEVELOPING SOFT SKILLS IN HOSPITALITY EDUCATION	1 -
EDUCATION MARKETING-SUSTAINABILITY.....	11
EVALUATING THE INNOVATIVE STRATEGIES IN THE GREEK EDUCATION SYSTEM. THE INSTITUTION OF EDEAYS.....	11
SPECIAL EDUCATION PRACTICES.....	19
EDUCATIONAL MARKETING AND THE INFLUENCES OF SUSTAINABILITY ON EDUCATION	19
INTRODUCTION OF MARKETING IN GREEK PUBLIC EDUCATION	27
EDUCATION PRACTICES AND POLICY	33
EVALUATION AND SELF-EVALUATION IN DAF COURSES	33
ONLINE EDUCATION	41
DIGITAL LIBRARIES AS A BASIC MEANS OF LEARNING DURING THE PERIOD OF COVID-19 PANDEMIC	41
PERCEPTIONS OF TEACHERS AND STUDENTS ABOUT MOBILE LEARNING ...	48
SCHOOL LEADERSHIP	56
E-MARKETING STRATEGIES OF PRIVATE PRESCHOOL UNITS DURING THE PANDEMIC PERIOD	56
ADMINISTRATIVE DECISIONS/PRACTICES MAKE THE SCHOOL EFFECTIVE	66
THE ROLE OF THE DIRECTOR IN QUALITY CONTROL MANAGEMENT - EXPERIMENTAL SCHOOLS	71
EDUCATION PRACTICES.....	77
ENVIRONMENTAL EDUCATION AND UTILIZATION OF NATURAL AND RECYCLABLE MATERIALS IN EARLY CHILDHOOD.....	77
HISTORY, PHILOSOPHY AND TEACHING OF NATURAL SCIENCES. PERCEPTIONS OF TEACHERS OF SECONDARY EDUCATION	83
DISTANCE-EDUCATION PRACTICES.....	90
ACTION RESEARCH AS AN INNOVATIVE PRACTICE IN PRESCHOOL EDUCATION	90
STUDENTS LEARNING EXPERIENCE DURING THE COVID 19 PANDEMIC.....	98
THE VALUE OF ETHICS IN EDUCATION IN MODERN GLOBALIZED SOCIETY	106
CHILDREN WITH DISABILITIES AND THE RIGHT TO EDUCATION: THE CASE FOR INCLUSION	113
EDUCATION POLICY.....	119

TRANSNATIONAL ORGANIZATIONS AND RECONSTRUCTION OF NATIONAL EDUCATION POLICY	119
KNOWLEDGE MANAGEMENT AND KNOWLEDGE SHARING IN SECONDARY SCHOOL TEACHERS	125
PRACTICE OF INTRODUCING DEMOCRACY IN THE CLASSROOM	133
THE MORPHOLOGY OF THE LEAVES.....	143
EDUCATIONAL PLAN USING QGIS SOFTWARE.....	150
COURSE OF MUSIC INNOVATIVELY TAUGHT VIA ICT AT PRIMARY SCHOOL	156
STEM.....	163
STEAM APPROACH WITH THE TITLE: BUILDING MY OWN DAM.....	163
PILOTING ROBOTICS & STEAM IN THE GREEK CURRICULUM.....	171
EDUCATION POLICY AND PRACTICES	179
EFL TEACHERS' VIEWS TOWARDS THE PROMOTION OF 21 ST CENTURY SKILLS	179
TEACHERS EDUCATION PRACTICES.....	188
DIMENSIONS OF SCHOOL EFFECTIVENESS IN THE PRIMARY SCHOOL OF THESSALONIKI.....	188
4th INDUSTRIAL REVOLUTION: EXPLORING THE KNOWLEDGE AND READINESS OF SECONDARY SCHOOL TEACHERS	197
THE IMPACT OF THE TECHNOLOGY OF THE 4TH INDUSTRIAL REVOLUTION ON STUDENTS, EDUCATION AND SOCIETY	205
HUMAN RESOURCES DURING PANDEMIC	213
BASIC INDICATORS OF QUALITY PROCESSES IN SPECIAL EDUCATION SCHOOL UNITS	213
EDUCATION POLICY AND PRACTICES	224
COMPARATIVE STUDY ON THE STRUCTURE OF EUROPEAN EVALUATION SYSTEMS IN EDUCATION	224
EXPERIENTIAL TEACHING METHOD – STAIRS.....	234
THE IMPORTANCE OF DISASTER SAFETY EDUCATION IN ADULTS. A SYSTEMATIC REVIEW	240
LEADERSHIP	250
LEADERSHIP AND CHANGE IN THE GREEK SYSTEM OF PRIMARY & SECONDARY EDUCATION	250
THE EFFECT OF THE LEADERSHIP MODEL OF THE DIRECTOR OF THE EDUCATION UNIT ON THE SPECIAL EDUCATION TEACHERS' BURN-OUT.....	259
THE VIEWS OF HEADTEACHERS OF SECONDARY EDUCATION SCHOOLS IN WEST THESSALONIKI ABOUT ADMINISTRATION FUNCTIONS IN EDUCATION.	266

STEM.....	274
CREATING EDUCATIONAL "SOFTWARE" – GAMES THROUGH WIX	274
STEAM AND SPECIAL EDUCATION	281
TEACHING PYTHON VIA RUR-PLE (RUR - PYTHON LEARNING ENVIRONMENT) PLATFORM	288
EDUCATION-HISTORY	297
THE IMAGE OF THE ARMATOLI AND THE THIEVES IN THE MEMOIRS OF NIKOLAOS KASOMOULIS	297
THE SYNERGY OF FINE ARTS TO THE ENGAGEMENT AND PROMOTION OF A LITERATURE PIECE OF WORK.....	301

STEM-ADULT EDUCATION

THE USE OF SOCIAL MEDIA IN DEVELOPING SOFT SKILLS IN HOSPITALITY EDUCATION

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ABSTRACT

Social media constitute an integral part of the modern life with great popularity on young people; consequently it was inevitable not to be explored as a prospect of teaching and learning tool eventually. The purpose of this paper is to overview the available scientific literature on the uses of social media in higher education in an attempt to promote the development of soft skills for students of the field of hospitality; discussing observed advantages and disadvantages along with viewpoints of direct stakeholders.

Key Words: social media, educational tools, soft skills, hospitality education.

INTRODUCTION

The term social media (SM) pertains to a wide range of social networking applications, used as an instrument of social interaction, collaboration and creative expression (Dabbagh & Reo, 2010). Such applications encompass social networking sites, wikis, blogs, virtual game worlds, multimedia platforms and virtual social worlds (Mcewan, 2012), on which users may share the videos, images and latest news, while staying in contact with others (Al-Qaysi, Mohamad-Nordin, & Al-Emran, 2020; Rerung, 2021). Social media has grown tremendously in popularity over the past decade. There may be some individuals who are reluctant to embrace SM platforms, mostly owing to privacy concerns. Nevertheless, in recent years, social media has become a daily activity with considerable relevance and effect on the majority of the human population (Rasheed, 2020). SM has evolved into a powerful and dominant means of communication, engagement, knowledge, and learning, not exclusively for personal use but also for business purposes as well (Al-Qaysi, Mohamad-Nordin, Al-Emran, 2020). It is commonly acknowledged that, with the constant improvements of digital technologies, SM, in particular, has transformed modern societies through their diverse variety of uses (Toplu, Yaslioglu, & Erden, 2014). It is indisputable that SM is observed to be appealing, primarily to younger generations (Zhang, Flammer, & Yang, 2010), who are known to be active users and this fact definitely includes the vast majority higher education students (Kaplan, & Haenlein, 2010). Based on several studies, students are less likely to use traditional technology like email (Roblyer, McDaniel, Webb, Herman & Witty, 2010) and SM constitute an integral part of their life (Zhang, Flammer, & Yang, 2010),

spending over 3 hours daily on respective applications, even during classes (Kaplan, & Haenlein, 2010; León, 2013).

The incorporation of SM in society and its widespread use, inevitably forces higher education into the digital era, promoting communicative and active learning through diverse platforms, such as networking sites and communities as well as instant messaging programs (Caiwei et al., 2014). The advent of new technologies and their ever-changing development has resulted in a corresponding integration in teaching and learning (Burbules & Callister, 2000; Rodriguez, 2011; Rerung, 2021). For instance, due to the pandemic, remote teaching became an emergency and the use of advanced technologies was a prerequisite for this imperative conversion (Hodges, Moore, Locke, Trust, & Bond, 2020; Rerung, 2021; Smith, 2021). However, it was not only a few educators that were reluctant to adjust to these forced circumstances and switch instantly to distance learning, as did some students, who were also hesitant with this new inevitable reality (Hodges, et al., 2020; Smith, 2021). It has already been discussed, that educators should utilize SM in various educational processes, instead of ignoring the fact that they constitute a mainstay which possesses considerable influence on young individuals. The fact that the integration of social media in higher education develops closer links between students and institutions, has already been established anyway (Moghavvemi, Sulaiman, Jaafar, & Kasem, 2018). Most academics propose it as a complementary educational tool (Raiman et al., 2017), since conventional teaching and learning techniques are proven to be the most efficient and effective (Leon, 2013). Thus, SM is already seriously considered to be employed as a supplementary teaching tool, by incorporating its use into courses for a great range of educational purposes, from managing courses and improving teaching together with learning, to enhancing student motivation and increasing their engagement (Balevičienė, 2015).

As regards the industry of tourism, it was one of the first industries that benefited from the emergence of new internet technologies, especially in the airline and hospitality sectors, and more particularly in terms of airline ticketing and hotel reservations systems (Caiwei et al., 2014). As users get more familiar with SM platforms and acquire further knowledge, their travelling demands are accordingly transformed and aforementioned applications have been soon established as dominant marketing tools for travelling needs (Geho & Dangelo, 2012). In terms of hospitality education, the vocational nature of the courses taught in the field, entails that hospitality students follow diverse learning styles and are more likely to use SM in their learning, in comparison to students of other educational fields (Hsu, 2011), being more sensing, visual, active and persistent comparing to their counterparts of other fields (Cranage, Lambert, Morais & Lane, 2006).

This paper aims to overview the available scientific literature on the social media landscape in higher education, to outline established benefits and drawbacks of its use as well as to discuss existing viewpoints and perspectives of both educators and students, with the intention of identifying how social media may promote the skills development for hospitality students in higher education.

LITERATURE REVIEW

1. Social media uses in education

A great range of researches is available in scientific literature, investigating the feasibility of using social media as supplementary pedagogical tool, in various fields beyond hospitality (Isacsson & Gretzel, 2011; Caiwei et al., 2014; Moghavvemi, Sulaiman, Jaafar, & Kasem, 2018; Rerung, 2021; Smith, 2021; Daly, et al., 2022), such as linguistics (Laserna & Miguel 2018), architecture (Jamal & Ainah, 2015), engineering (Yu & Liu, 2015; Bastos, De Oliveira, Silva & Azevedo, 2019; Maturro, Raschetti & Fontán, 2019; Cately, 2020; Daly, McCann & Phillips, 2022), business (Barczyk & Duncan, 2011), information technology (Mardiana, 2016; Bastos et al., 2019; Maturro et al., 2019; Cately, 2020; Daly, et al., 2022) as well as healthcare and medicine (Duncan, Yarwood-Ross, & Haigh, 2013; Raiman, Antbring, & Mahmood, 2017; Manhas & Kaur, 2018; Singla, Kumar & Badyal, 2020). The most common options with prospects of use in education, are founded to be Facebook (Rasheed, 2020), Twitter (Gao, Luo, Zhang, 2012), Youtube (Moghavvemi, et al. 2018), Instagram (Al-Sharqi, Kutbi, & Hashim, 2016; Ibrahim, Norsaal, Abdullah, & Othman, 2016), Skype (Irwin, Ball, Desbrow, & Leveritt, 2012) as well as blogs and wikis (Blankenship, 2011). Other platforms that have also been explored as useful educational tools are Google+ (Singla, et al., 2020), LinkedIn (Irwin, et al. 2012; Manhas et al., 2018), Telegram (Ibrahim, et al., 2016), Tencent QQ (Caiwei & Norman, 2014) and WhatsApp (Singla, et al., 2020).

It is crucial that SM is freely available to users (Caiwei et al., 2014; Niu, 2019; Rasheed, 2020) and course resources may be shared on most of the available social networks (Smith, 2021). Their overall use may vary from presenting visual objects and videos to exchanging information and sharing content instantly, increasing student motivation, improving academic performance and specifically contribute to particular skill development (Ma & Au, 2014). Some researches even propose using respective solutions as Learning Management Systems, with the intention to effectively engage students in all academic procedures and learning processes (Rasheed, 2020).

Live streaming sessions on Facebook, Vimeo and YouTube may promote interaction and create a more live class, with comments and chats being available, encouraging in this manner discussion by allowing direct Q&A activities (Smith, 2021). Online forums comprise a beneficial tool of developing skills, exchanging ideas and cultivating an improved culture (Smith, 2021). A great variety of LMSs, like Canvas, Blackboard and Moodle, supports SM integration, through which, benefits may be maximized as its features will be utilized (Rasheed, 2020).

Facebook (FB) is deemed as the most attractive social network, to both educators and students (Barczyk & Duncan, 2013; Ventura & Quero, 2013; Hamid, Waycott, Kurnia & Chang, 2015; Sadowski, Pediatris, & Townsend, 2017; Niu, 2019; Rasheed, 2020), thus, is the most researched SM tool for educational purposes (Roblyer, McDaniel, Webb, Herman, & Witty, 2010; Caiwei et al., 2014; Al-Qaysi et al. 2020; Rerung, 2021). It is commonly used for staying in contact with friends and family (Oyedele & Oladeji, 2018), sharing multimedia content and updating text statuses (Ibrahim, et al., 2016).

Education-wise, Facebook provides the opportunity of facilitating communication with faculty as well as among students, sharing class and further educational resources, delivering course assignments, receiving feedback and obtaining marks (Rasheed, 2020). This specific SM option has also been investigated as an LMS alternative (Naidu, 2005; Kalelioğlu, 2017; Niu, 2019; Rasheed, 2020), however, some studies concluded that traditional LMSs, like Blackboard, remain more effective (Sánchez, Cortijo & Javed, 2014; Hamid, 2015; Sadowski et al. 2017; Niu, 2019).

It retains particular grouping features, which enable group discussions and sharing information on certain topics, while additionally support active collaboration, interaction and knowledge sharing (Arnold & Paulus, 2010; Irwin, Ball, Desbrow, & Leveritt, 2012; Bicen & Uzunboylu, 2013; Rasheed, 2020, Rerung, 2021) as well as features that support in-class Q&As (Yu & Liu, 2015). It is anyway established that FB encourages positive relationship among users who share common interests and additionally improves social and cognitive skills of students (West, Lewis, & Currie, 2009; Christofides, Muise & Desmarais, 2009; Kabilan, Ahmad, & Abidin, 2010; Bicen & Uzunboylu, 2013; Oktavia, Husda, & Suhardianto, 2019; Rerung, 2021).

YouTube constitutes an effective way to provide further guidance to students (Green & Hope, 2010; Manca & Ranieri, 2016), to link theory to practice and to farther comment on a topic, by sharing and uploading videos relative to the content of a course (Burke, Snyder, & Rager, 2009; Moghavvemi et al., 2018). Several researchers support in addition, that through YouTube videos, the understanding of a topic may be simplified (DeWitt, Alias, Siraj, Yaakub, Ayob & Ishak, 2013; June, Yaacob, & Kheng, 2014; Orús et al., 2016), critical consciousness may be increased, deep learning may be accelerated and engagement may be ensured (Clifton & Mann 2011; Moghavvemi et al., 2018). It should be though noted that, sometimes the outcome may be affected by the low quality that a video potentially has (Duncan, et al., 2013). However, it has been observed that even though many students seem to seek information and learn through YouTube, the frequency of its use as a teaching tool along with its overall effectiveness lag far behind Facebook (Moghavvemi et al., 2018).

Twitter as a microblogging site, facilitates instant user interaction via short messages (Mardiana, 2016; Oyedele et al., 2018; Rerung, 2021). This application enables students to share ideas, ask questions, receive feedback and distribute valued sources in an instant manner (Junco, Heiberger & Loken, 2011; Caiwei et al., 2014; Rerung, 2021). Students may be involved in a variety of activities, like commenting, discussing or simply reading tweets (Ebner, Lienhardt, Rohs, & Meyer, 2010), which activities enhance learning, as knowledge transformation is accelerated (Caiwei et al., 2014). It has even been recommended to include “Twitter breaks” in classrooms, when students may initiate a discussion over questions posed on Twitter (Barczyk, 2011).

Messaging applications have also been researched as possible teaching tools. WhatsApp is upheld as the most popular messenger application for exchanging simple text messages and sharing multimedia, such as audio messages, photos and videos (Kustijono & Zuhri, 2018; Singla et al., 2020). It is useful for topic discussions with regards to class content (Barhoumi, 2015) and is seen as a convenient tool for a variety of learning and teaching activities (Gon & Rawekar, 2017). Telegram is an application that enables quick and easy information sharing. It is advertising-free and supports the most common Microsoft document formats that are used by educators. Forums or discussion groups, of up to 200 participants, is also feasible to be created (Ibrahim, et al., 2016). Tencent QQ is a messaging application with similar features to the aforementioned alternatives, widely used in China (Caiwei et al., 2014).

As described above, the vast majority of SM platforms may be used as an educational tool, nevertheless, Facebook seems to be the most popular tool used in various educational processes; probably due to the fact that possesses more extended features in comparison to the rest available options. It can support almost all features of the rest SM, like sharing videos, opening a discussion, sharing files and microblogging.

2. Benefits of social media uses

The implementation of SM as a complementary educational tool may have a great range of benefits, such as enabling deeper understanding, gathering and sharing abundant information (Hsu & Ching, 2011; Yu & Liu, 2015) as well as transforming knowledge and experiences (Lu & Chen, 2011), through various multimedia sources and text content (Khan, 2005; Li & Shiu, 2012; Caiwei et al., 2014; Rerung, 2021). Other benefits may refer to generating effective communication (Rodriguez, 2011; Leon, 2013; Tess, 2013; Al-Sharqi, et al., 2016; Raiman et al., 2017; Singla, et al., 2020; Rerung, 2021), without requiring physical presence (Barczyk, 2011; Clifton et al., 2011; Wakefield, Warren, & Alsobrook, 2011; Leon, 2013; Lopez & Cleary, 2018; Martunis, 2020) and limitations in relation to time (Barczyk, 2011; Clifton & Mann, 2011; Caiwei et al., 2014; Manhas & Kaur, 2018; Martunis, 2020). In addition, it constitutes a form of asynchronous learning with flexible timings, providing the advantage of self-directed pace and an improved efficiency in proportion to available resources (Sener, 2010; Worthington, 2013; Laserna et al., 2018). Learning, communication and engagement are enhanced (Laurillard, 2008; Vaeljataga & Fiedler, 2009; Isacson et al., 2011; Blankenship, 2011; Rodriguez, 2011; Mardiana, 2016; Shaw, Sperber & Cunningham, 2016; Oyedele et al., 2018), as students are becoming more active by expressing ideas more easily comparing to a traditional class environment (Anderson & Haddad, 2005; Chan & Chan, 2011; Barczyk, 2011; Caiwei et al., 2014; Shaw, et al. 2016; Laserna et al., 2018; Oyedele et al., 2018; Martunis, 2020).

The use of SM in educational processes may positively influence academic progress (Bereiter & Scardamalia, 1989; Hung & Yuen, 2010; Laserna et al., 2018; Rerung, 2021) and develop a closer link between students and educators (Cao & Hong, 2011; Laserna et al., 2018; Lopez et al., 2018; Moghavvemi et al., 2018; Singla et al. 2020). Instruction and learning processes are also boosted (Rodriguez, 2011; Mardiana, 2016; Al-Qaysi et al. 2020), through the provision of an open learning environment (Franceschi, Lee, Zanakis & Hinds, 2009; Chan & Chan, 2011; Caiwei et al., 2014). It generally transforms the manner of communication along with collaboration and overall improves education (Anderson & Haddad, 2005; Naidu, 2005; Rodriguez, 2011; Selwyn, 2009; Tess, 2013; Singla, et al., 2020), with positive effects on students' satisfaction and educational outcomes (Bereiter et al., 1989; Orús, Barlés, Belanche, Casalos, Fraj, & Gurrea, 2016; Al-Qaysi et al. 2020). Through the use of SM higher academic performance may be achieved (Bereiter et al., 1989; Hung & Yuen, 2010; Lu & Chen, 2011; Blankenship, 2011; Mardiana, 2016), by improving learning process and enhancing knowledge acquisition (Hung & Yuen, 2010; Mardiana, 2016; Mirabolghasemi & Lahad, 2013; Balevičienė, 2015; Lopez et al., 2018; Oyedele et al., 2018), SM may conduce to the acceleration of interaction and active participation (Al-Sharqi, Kutbi, & Hashim, 2016; Oyedele et al., 2018), as well as to the advancement of problem solving, critical thinking and reflection (Ajjan & Hartshorne, 2008; Selwyn, 2009; Hsu & Ching, 2011; Lopez et al., 2018). Students are enabled to individualize learning, via its participative features (Zhang, Flammer & Yang, 2010; Wakefield, Warren, & Alsobrook, 2011), while they may also demonstrate higher levels of motivation and self-efficacy (Bereiter et al. , 1989; Caiwei et al. 2014; Mirabolghasemi, et al. 2013; Oyedele et al., 2018).

It is indisputable that SM influences the manner that individuals learn (Hung & Yuen, 2010; Al-Sharqi, et al., 2016; Laserna et al., 2018; Moghavvemi et al., 2018). It is generally recognized that collaborative learning is established as one of the key skills for the twenty-first century workforce

(Looi, Chen, & Ng, 2010), and online forums are an excellent means to exchange information and experiences and accomplish progress (Smith, 2021). It is further suggested that SM encourages self-regulation, among other indispensable skills (Alenazi, 2017) and it is also agreed that the implementation of SM in education promotes various skills, which are vital for the later professional career of student (Balevičienė, 2015; Faeza, 2019).

In overall, it is recognized that SM may boost the development of the students' soft skills; soft skills are human relations associated competencies (Cho, 2006) and comprise a key requirement for hospitality graduates (Tas, 1988; Baum, 1990; Eaton & Christou, 1997; 2006; 2010; Christou & Karamanidis, 1999a, 1999b; Christou & Sigala, 2002, Christou & Chatzigeorgiou, 2019). Another area of satisfaction is the fact that learning a new language (Rerung, 2021) and acquiring ICT knowledge (Caiwei, et al., 2014) may be promoted through the use of SM in educational processes, which are also very important for the hospitality workforce. There are innumerable studies available, aiming to accurately identify required skills, competencies and knowledge for students that seek to pursue a career in hospitality industry. The dynamic nature of hospitality hinders the precise definition of what skills and competencies a graduate is required to possess, although it is commonly agreed that graduates should be multi-skilled, so as to be flexible, creative and adaptable (Christou, 2002). The vast majority of authors call attention to the diverse nature of ongoing changes and updates in the industry in like manner to the significance of relevant educational programs to keep pace with the events, indicating that educational processes and even course content should be adjusted accordingly when required (Kumar, Suklabaidya, & Gautam, 2020). Albeit contrasting various international researches on core skills and competencies demonstrate similarities, considerable deviations are noted from one place to another, as the hospitality industry is heavily affected by human, socioeconomic and cultural influences. Hence, it is not adequate to exclusively rely on worldwide studies, but it is necessary to consider conjointly the local market, implicating the standpoints of tourism professionals and examining them in contrast with the viewpoints of academia (Marneros, Papageorgiou, & Efstathiades, 2021). In summary, higher education in hospitality should assist the student to develop communications and interpersonal soft skills and learn how to lead others (Goodman & Sprague, 1991; Eaton & Christou, 2000). The development of students' interpersonal skills is considered to be of paramount importance according to the views of the hospitality industry (Tas, 1988; Baum, 1990; Eaton & Christou, 1997; 2006; 2010; Christou & Karamanidis, 1999a, 1999b; Christou & Sigala, 2002).

3. Challenges of application

Nevertheless, beyond the innumerable advantages, some particular drawbacks are revealed to derive from the integration of SM in educational procedures. It is evident that such applications may result in distracting the attention of students, limitation of physical social interaction and may easily become an addiction (Lin, Hou, Wang, & Chang, 2013; Mathews, Hiep, Bill, Tri, Joan, Ross & Jamal, 2015; Al-Sharqi et al., 2016; Allam & Elvas, 2016).

Furthermore, personal privacy and data confidentiality are considered to be a severe matter of contention and ethical discussions are a profound requirement, in order to maintain trust and ensure privacy protection (Liu, 2010; Skiba, 2011; Cleary, Ferguson, Jackson, & Watson, 2013; Manca et al., 2017; Chugh & Ruhi, 2018; Lopez et al., 2018; Manhas & Kaur, 2018; Martunis, 2020; Rasheed, 2020). Another issue that should be taken into serious account is the risk of unreliable sources, inaccurate content, and biased reports, which are published online and may easily, lead to misleading and false information (Liu, 2010; Manca et al., 2017; Martunis, 2020). Therefore, the validity of sources should be carefully checked, not only when sharing available content but also when simply reading online information.

Cost is another issue to deal with, since potential reluctance of both learners and instructors may necessitate more time, effort and money, while simultaneously may result in substantial loss of relevant benefits (Davis, 1989; Al-Qaysi et al. 2020). A formal training for educators may be helpful in the attempt to respond promptly and properly (Al-Sharqi, et al., 2016; Singla et al., 2020), with solid moral grounds (Manhas & Kaur, 2018).

Last but not least, network demands together with support may be a further concern. Great demands for internet access on institution facilities occur regularly (Ibrahim, et al. 2016; Selwyn, 2016; Singla et al., 2020) and lack of required technical support is evidenced (Al-Sharqi, et al., 2016; Selwyn, 2016; Martunis, 2020). Many institutions provide certain services, such as wireless access and operate

dedicated internet rooms, so as to facilitate network connectivity and effectively deal with arising network and technical issues (Caiwei et al., 2014).

CONCLUSION

Social media platforms may have originally begun as instruments of entertainment which quickly grew into a huge phenomenon of marketing, however are now also viewed as innovative educational tools that may potentially be employed in the development process of skills. It is concluded that the integration of SM in teaching and learning may be in many ways beneficial to a great range of educational processes and assist effectively in the development of various skills and particularly the vast majority of those are a necessity for the hospitality industry, referring most of the times to soft skills. It should be though noted, that SM are so far suggested only as a supplementary teaching and learning tool, with traditional learning and teaching methods remaining the most appropriate, efficient and effective. Certainly, there are assorted issues that are required to be addressed, inclusive of application limitations, howsoever, such platforms are updated on a regular basis and as a consequence leave room for future improvement. Updates and new features of various SM applications should be monitored by educators, in order to grasp any opportunities of further SM implementation in educational processes.

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EDUCATION MARKETING-SUSTAINABILITY

EVALUATING THE INNOVATIVE STRATEGIES IN THE GREEK EDUCATION SYSTEM. THE INSTITUTION OF EDEAYS

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ABSTRACT

In the present study, the assessments of 20 primary school principals in Greece were analysed regarding the quality of their cooperation with school psychologists. The aim of this study is to highlight how school principals view the operation of the Interdisciplinary Educational, Evaluation and Support Committees (EDEAYs). The content analysis of the data collected resulted in specific issues to emerge, including the difficulty of determining the distinct roles of participants in an EDEAY, the lack of culture for interdisciplinary collaboration between those involved in educational processes, as well as variables that act as a deterrent to the integrated development of school psychological support strategies for students.

Key Words: Innovation and Education, School Psychological Support, Inclusive Education.

PURPOSE

This study aims to investigate how the coordinators of the School Networks of Educational Support (SDEYs) determine the services offered by the EDEAYs and their cooperation with psychologists, social workers, and classroom teachers. In particular, this study aims to highlight the principals' views of the primary education units on the operation of EDEAYs and the possible benefits for their school unit that result from the provision of school psychological support to the EDEAYs.

The individual objectives of the research were to explore the views of primary school principals regarding a) the philosophy of inclusive education and the operation of new integration processes in the school context; b) the distinct roles of those involved in EDEAYs; c) the key points in the shaping of cooperation between principals and school psychologists; d) the difficulties and possibilities of improving this cooperation.

The research questions were formulated based on these individual objectives and are the following:

- How is inclusive education defined in the Greek school environment?
- What are the integration applications for students with disabilities in school everyday life? - How are they valued?
- What is the distinct role of psychologists?
- How is the cooperation between principles and psychologists perceived?
- What are the key points that shape the cooperation between principals and school psychologists in the Greek educational system?

- What is the role of the Ministry of Education, the executives in education, the teachers, the dedicated staff, the parents in the collaboration between managers and psychologists?
- What are the strengths of the cooperation between managers and psychologists for students with disabilities in Greece? What are the weaknesses and the proposed changes?

RESEARCH METHODS

The quality method was considered more effective to conduct this study in the field of education, thanks to the flexible way of implementing it and approaching the issue, and due to the limited sample available and the peculiarities of the way EDEAYs operate in the Greek education system. To explore and evaluate the principals' perceptions who participated, we captured their experiences and views in the present period. We have no intention of generalizing the research results or drawing conclusions causally related to each other (Camic, 2021).

For this research, the approach of social construction is followed, according to which reality is socially constructed and a consequence of the interaction of individuals. According to this approach, it is considered that most of the time, the interaction between the active subjects leads to "realities" through negotiation and construction processes that relate to the given environment and are related to the specific culture (Engel et al. 2019). Emphasis is placed on how the respective context and values determine the construction of social reality. Next, the notion of intersubjectivity is fundamental, that is, the social conventions and the shared culture that characterizes active subjects (Telep et al., 2021). In the context of this view, the researcher formulates questions through the study and analysis of subjective judgments and actions, aiming to interpret the phenomena under study. The above theoretical approach, the research objectives and the research questions, therefore, defined the research tool we used, the semi-structured interview (Lester et al., 2020).

The main research was deliberate in terms of selecting the participants. The sample consisted of 20 primary schools Principals in the educational region of Central Macedonia during the school year 2017-2018. The sample was considered sufficient since the number of established EDEAYs is limited. Also, according to Ricci (Ricci et al., 2019) the relatively small sample of participants is justified in conducting qualitative research because the focus is on the specific and in-depth meaning of what is said rather than on quantitative data that requires a larger sample size. The selection criteria for participating in this research were the following: a) The previous service of more than 4 years as Principal of a school unit (in order to ensure the administrative experience); b) Participation of 8 women and 12 men (in order for the sample to be numerically balanced and for both sexes to be equally represented); c) Being a holder of a postgraduate degree in special education and training (so that they are scientifically relevant to the questions).

We used the semi-structured interview as a research tool. During the semi-structured interviews, there were several predefined questions as a "basis" that were flexible in order and content based on the course of the discussion (Aspers & Corte, 2019). Therefore, in the semi-structured interviews, the researcher determined the content and flow of the questions, but the respondents were allowed to express their thoughts and describe their experiences in their own way (Creswell & Poth, 2016).

The pilot interview survey was conducted with a male elementary school Principal who, even though he met the characteristics of the research subject, would not participate in the survey due to retirement. The semi-structured interviews had an exploratory and interpretive purpose. The questions were chosen to be open, so the answers were more spontaneous and unguided. Prior to data collection, it was considered appropriate to check the suitability of the interview guide. This semi-structured interview helped make the research questions more specific and determine their clarity. During the process, the use of the terms was checked and finalized. In particular, difficulties were identified regarding the comprehension of the questions and the interview duration, so the necessary changes were made. The pilot survey was conducted in July 2017, at the end of the school year prior to the year in which the main survey was conducted. Before the interviews took place, the researcher informed about the purpose of the research and assured the participants about the confidentiality of their data.

In order to check the reliability of the interview guide, other similar, mainly European, surveys were studied while a pilot application was carried out during the pilot phase of the research process. Then, the criterion of reliability of long experience and contact was ensured through prolonged engagement. It is essential to mention that the researcher used to work in Primary schools for a long time.

To check the validity of the interview guide, it was also presented to a school psychologist and a teacher, without stating the purpose of the research, to determine whether the guide could explore beliefs regarding the dominant educational policy in special education. In addition, for the same reason, the texts of the interviews were reviewed by the participants, who stated that their views were not misinterpreted, thus enhancing the validity of the survey data.

Based on the general purpose, the individual objectives and the research questions, the thematic areas, and the interview guide's questions were formulated. Initially, there was a set of questions regarding the demographic data of each respondent, their grammar knowledge, their experiences regarding special education and the services they provided. In addition to the demographics, the thematic areas on which the interview questions were based and the interview guide was written were as follows:

Philosophies underlying inclusive education and the operation of new institutions in the school context.

1. What is the philosophy of inclusive education and what are the integration practices in a Greek school?
2. What is its history?
3. What is the dominant model regarding students with disability in Greece?
4. What is the application of inclusive education in school everyday life? How is it evaluated so far?

Distinct roles of those involved in EDEAYs

1. What are the roles laid down regarding the cooperation between managers and psychologists in EDEAYs?
2. How is the cooperation of those involved regarding school psychological support reflected?

Factors shaping the collaboration between principals and school psychologists

1. What are the factors that affect the cooperation between managers and psychologists in the context of an EDEAY?
2. What is the role of the Ministry, the competent bodies and the executives in Education?
3. What is the role of the school community?
4. What is the role of the teachers?
5. What is the role of the parents?

Improving the cooperation between managers and psychologists

1. What are the strengths of the cooperation between managers and psychologists?
2. What are the weaknesses?
3. What are the proposed changes?

The analysis of the semi-structured interviews was done qualitatively with the content analysis method, which is a qualitative method for secondary analysis. This analysis prioritises spontaneous answers, their interpretation and the methodical drawing of conclusions. Content analysis is associated with semi-structured interviews (Stemler, 2001).

Qualitative content analysis was chosen for the present study because it facilitates systematic and qualitative access to the messages of the interviews. The qualitative content analysis reinforces the view that the texts, i.e. the material to be analysed, operate within a specific socio-political, historical and ideological context and thus reflect the assessments of specific social groups or classes (Krippendorff, 2018).

After the data was collected, we defined the analysis techniques. The recording unit was selected as the analysis unit. The subject, suitable for research drawing beliefs and attitudes (Lewis & Jarvis 2019), was identified as the recording unit. Also, the use of the subject as a recording unit is considered appropriate for the thorough investigation and for highlighting as many aspects of the subject under consideration as possible. Through content structuring, the data were indexed based on the units of analysis, classified by category and subcategory, and classified into (sub-) categories with the paraphrasing technique (Aspers & Corte, 2019).

Then, the category-based induction was set up. With the constant comparative method, the relations between the categories were investigated, and, in the cases where overlap between two categories was found, the smaller categories were merged into a larger one.

Finally, to enhance the reliability of the categorisation method, data analysis was done by an additional researcher (Krippendorff, 2018). The coding criteria were presented, and yet another coder was appointed. The researcher and the coder each analysed separately but with the same coding criteria. The material was classified by category and subcategory. The reliability was checked through the test-test method and was based on an agreement between coders. The minimum degree of agreement in the classification by category and subcategory between the researcher and the coder was estimated at 0.87. The agreement was calculated based on the formula $V^2 = 2M / (N_e + N_1)$, where M is the number of papers in the classification of which there is an agreement; N_e is the total number of papers classified by the researcher by category and subcategory; N_1 is the total number of papers classified by the coder. The overall agreement score between the two was 0.92, a quite satisfactory score (Lewis & Jarvis, 2019).

The category-based induction based on which the analysis was done is the following:

Category-based induction

1. Political leadership - Ministry of Education
2. The role of the school psychologist
 - 2.1. Psychologist and integration policy
 - 2.2. Psychologist and traditional school
3. Cooperation and school culture
 - 3.1. Traditional school culture
 - 3.2. Integration school culture
 - 3.3. What is the role of the parents?
4. Meaning of dominant educational policy: Improvement and changes

RESULTS AND DISCUSSION

1. Political leadership - Ministry of Education

All the principals interviewed state that they are unaware and confused about the dominant models of school psychological support. They estimate that the Ministry does not have a clear educational policy and is constantly changing its philosophy and orientation, mainly considering the financial figures and the political cost, while the principals' margins for self-action are small.

"Nothing is clear; we have no official information and nobody to turn to. The path we are following is unclear" (Kostis).

The gap between planning and practical application is commonplace in most countries, regardless of chosen support model. The main reason for this gap is education costs, which leave no room to implement new and innovative programmes. These costs in a knowledge-centred approach and labour market-focused schooling system make it challenging to promote policies that focus on the social dimension of inclusion. In public schools, apart from the necessary logistical infrastructure and integrated staffing with trained teachers, it is necessary to promote equality and authentic relationships between students. This will result in them contributing to the integration of all students inside and outside the school environment (Vasileiadis & Doikou-Avlidou, 2018).

2. The role of the school psychologist

2.1 Psychologist and integration policy

The majority of principals believe that the promotion of psychological support policies in schools requires (a) the application of the social model; (b) the presence of a psychologist and social scientists within the school in order to organise social inclusion programs; (c) the cooperation of all involved; (d) the connection of the school with the family and the greater society; as well as (d) activities outside the school context as well.

"An EDEAY operates well when the psychologist is aware of the school's everyday life, rather than being locked in an office and looking for cases to examine. Here, we do not deal with cases but with students. Working with them... helping parents and colleagues" (Antonia).

These views are linked to the majority of the literature. A school psychologist being present plays an essential role in introducing all those involved in the inclusive education processes and tackling

classroom problems. Inclusion policies are linked to the constant and integral presence of the psychologist in educational processes. In order to avoid divisions and students getting stigmatised, schools must be reinforced with scientific staff and responsibilities that will allow them to solve the resulting problems internally, without constantly resorting to external services or structures. In other words, the school unit needs to be independent enough to be able to amend and redefine without requiring the intervention of third parties and external bodies, which usually ignore the philosophy and principles governing this school (Vasileiadis et al.,2021).

2.2 Psychologist and traditional school

Criticism against psychologists focuses on them being reluctant to apply innovative techniques and adopting bureaucratic logic. However, there are also objections regarding the role of psychologists in school processes. Many principals believe that many psychologists do not follow the social model but the medical one, which can turn them into an obstacle while developing the integration culture within the school context.

"Of course, some psychologists have no idea what we do at school ... they only want to see students individually and are not willing to work with colleagues ... and us without knowing what they are doing with the children" (Thanasis).

Scientific monographs support these findings. The dominant educational policy, the traditional school structures and the existing work framework reserve a specific role and actions for the psychologist and for the scientific staff working in education, in general. In the literature review, the dominant relationship between the school psychologist with students is a dependency relationship where, at the first level, the psychologist is called to identify and meet the student's needs. Consequently, the medical model has been applied in school everyday life as the means for specialists to "take care" of the student. The approach, as mentioned above, leads weak students to become passive recipients of a wide range of professional and other kinds of interventions. However, as much as passivity is considered a result and creation of their weakness, in practice, it is more in the interest of the careers of those who provide services because it consolidates and strengthens their role as "specialists" and exclusive managers of the social, emotional and cognitive development of each student (Adelson & Brachfeld, 2020).

3. Cooperation and school culture

3.1. Traditional school culture

Most school principals say that the most critical factor in promoting or not school psychological support processes is the school culture that prevails in each school unit. They distinguish between a traditional and inclusive school culture.

"What do we do here, at school? If we are a team that helps solve difficulties in a way that helps our children, this is it... But if everyone cares only for themselves ... the atmosphere of the school is heavy. The usual 'attitude of the employee' does not help"(Nikos).

Due to its knowledge-centred approach, the traditional school culture does not focus much on the students' individual needs as on their academic performance. Due to the lack of flexibility on the schools part, which tends to embrace the traditional school approach, there is no space and time to manage the different educational needs, as it focuses on a predefined curriculum that teachers are required to carry out, working on their own (Shemanov & Ekushevskaya, 2002).

3.2. Integration school culture

Many respondents estimate that in cases where the inclusive culture prevails in a school unit, it facilitates their work and positively "attracts" even the most bad-tempered fellow teachers.

"Yes, when there is solidarity between us and a humane atmosphere, new ideas and programmes take place ... the psychologist will help our children when there is a good atmosphere here..." (Niki).

The research findings point out that the model of an alternative school culture tries to engage students to cope with the educational process at the rate that their unique characteristics and inclinations allow.

Therefore, students of "average" or "below average" level are allowed to reach their full potential while students with disabilities receive constructive support from teaching staff (Chae et al., 2019). 3.3. What is the role of the parents?

Participants believe that most students' parents are positive about promoting school psychological support, which facilitates the design and implementation of intervention programmes.

"Parents are an important factor and should be inspired by innovations and these new programmes... Parents strengthen their children emotionally, psychologically..." (Athanasia)

Theoretical and research data reinforce the above position. The positive response of parents towards students' psychological support processes helps increase their expectations regarding the mental resilience of their children. Thus, parents incentivise their children and take care of them accordingly, so the latter improve and try harder, which increases the effectiveness of intervention programs (Qu, 2020).

4. Meaning of dominant educational policy: Improvement and changes

According to the estimates of the majority of participants in the research process, the main obstacles to the smooth development of psychological support in schools are related to the contradiction between the Ministry's announcements and the actual demands of schools. Principals state that fellow educators are often called upon to act solely based on their personal abilities and ambitions, which does not promote the development of a culture of cooperation. They conclude that more cooperation is needed between the teachers to develop the support structures further.

"But they ask us to help the EDEAY, beyond our role. How? Without resources and plan? With the decency of the teachers, again" (Tasia).

The research findings show that cooperation requires the existence of a public school culture that is accepted and applied in practice by all those involved in school everyday life. Live cooperation is challenging to create and maintain mainly because it contradicts all the pressures and restrictions that workers in education face. The two main parameters that hinder its development are time and the knowledge-centred education approach (Nilholm, 2021).

IMPLICATIONS

According to the research results, an attempt is made to evaluate the attitudes and the role of all the principals involved regarding the implementation of the psychological support procedures in schools. Also, the limitations of the present research emerge and the prospects for future research in the field under study.

Regarding the philosophy of inclusive education and the operation of new institutions in the school context, the research findings focus on principals' assessments that the level of information and training of the vast majority of principals and teachers on the above issues is incomplete and often misdirected. For both themselves and the classroom teachers, the requirements of everyday school life are judged to be detached from the basic principles and applications of inclusive education, which does not help teachers indulge and further engage with inclusion values. The prevailing belief regarding the institution of EDEAYs is that the Ministry constantly assigns new additional responsibilities to the school administration and the staff without the appropriate education, training or preparation. Even in cases where the knowledge of the integration applications for students in the school routine is considered satisfactory, the psycho-educational intervention programs developed are minimal due to difficulties in coordination between those involved. Thus, the evaluation of school psychological support efforts is negative.

Next, regarding the distinct roles of those involved in the services offered by the EDEAY, the role of psychologists appears to be crucial. In cases where the EDEAY psychologist follows the principles of the medical model, it does not seem to promote the inclusive culture within the school context. The psychologist acts and works more divisively focused on students' pathology and problematic behaviours. On the other hand, principals are convinced that a school psychologist who, as an integral

part of the school, strengthens collective processes shifts the field of intervention for issues of coexistence and acceptance from individual impasses to group management within the school through the interaction of community members. Members of the school community are not limited just to students and teachers but also include parents, the school psychologist and administration and members of the local community. The attitude of the school administration towards the students' parents is considered necessary as well. The present study also finds that the traditional approach that parents only receive information from schools or are treated as customers by the free market does not strengthen nor promote psychological support for students in school. On the contrary, if the school unit treats parents as partners with a distinct role and as helpful counsellors regarding the development of their children, that would help develop psychological support at all school levels.

The research results focus on the actions of the Ministry and the envisaged policy strategy as fundamental factors for the organisation and determination of psychological support procedures in schools. In addition, the principals' assessments regarding the factors that shape the cooperation between principals and school psychologists are summarised into the following two: a) the dominant educational policy, b) the emergent school culture and the role of the principal. The principals believe that the Ministry of Education decisively determines the accession prospects in a centralised education system, such as the Greek one since it is the only body responsible for formulating the broader educational policy. Considering the above fact, the respondents estimate that in no case is their role directly related to the formation and formulation of educational policy in our country. On the other hand, the prevailing perception is no clear educational policy due to how the Ministry is structured and operates. Respondents cannot link the implemented policy regarding school psychological support in education with any dominant educational models.

Then, all participants believe that the main factor determining the effective psychological support of students or not in school units is the dominant school culture. School culture is also considered an "internal educational policy" for each school context and seems to be defined by two main, opposing directions. The first, the traditional school culture, is associated with developing personal motivation for students and teachers, with the cultivation of individualism and personal choices to enhance competition and connection to the labour market. The research findings connect the above principles with the prevailing atmosphere in the school that prevents the consolidation of the philosophy of inclusive education and the effective joint education of students. On the contrary, the results of the present research confirm that in schools where the prevailing atmosphere among teachers and the exercise of administration are linked to the principles of companionship, mutual assistance and sharing of responsibilities, dealing with students and their coexistence issues is settled in a way that is comforting and beneficial for all, contributing to the emancipation of the entire student population. Finally, to strengthen the institution of EDEAYs, the participants demand greater clarification and a better definition of the role of those involved.

When interpreting the results, however, we must consider the methodological limitations of the present research. First of all, the safer generalisation of the results was not allowed since the research sample was small and consisted of special schools principals in a single educational district. Secondly, it was impossible to compare the views and assessments of principles from other parts of Greece. Thirdly, it was impossible to ask the participants for a follow up after a long time and compare the research data to investigate whether there were any changes in the results due to objective reasons (e.g., transfers of principles). A weakness of the reliability of this research can be considered the fact that the principals' assessments of the potential role of the educational executives (formerly special education counsellors) in the formulation of the educational policy for the psychological support in schools were not interpreted in-depth. Having more than one respondent in the pilot phase of the research would allow safer conclusions to be drawn regarding the effectiveness of the interview guide. Subsequently, applying the multi-methodological approach would enable us to extract quantitative data and, therefore, safer conclusions.

From the mentioned limitations and based on the conclusions drawn from this research, prospects for further research activity with particular theoretical and research interests emerge. Primarily, it would be interesting to apply the research to a larger sample of principals and investigate the specific phenomena over a more extended period of one school year to compare and draw safer conclusions regarding the participants' assessments. It would also be helpful for the students' parents, teachers and special education staff to participate in a new research effort to explore the views of those also directly involved that objectively influence and shape the respective school culture. In addition, it seems that it

would be essential to examine the possibilities of investigating and comparing the views of ministry officials who have long been responsible for shaping the educational policy in our country

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SPECIAL EDUCATION PRACTICES

EDUCATIONAL MARKETING AND THE INFLUENCES OF SUSTAINABILITY ON EDUCATION

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ABSTRACT

The most important institution for the development of the child is undoubtedly school education. Investing in the quality of education is very important and necessary. In recent years there has been an attempt to change the general culture of schools, readjusting roles and creating new ones. Educational Marketing is a process where a school unit, through coordinated actions, tries to satisfy student's current and future needs, in a way that will bring benefit to them and to society. (Kotler & Fox 1995). Education for Sustainable Development and the "Sustainable School" are examples of innovation, based on original ideas, giving us a different perception of school (Kalaitzidis, 2014.)

Key Words: Educational Marketing, Innovation, Sustainable School, Education for Sustainable Development

PURPOSE

The purpose of this research was to study the Educational Marketing as it exists in the 3rd Primary School of Drama as well as the influences of sustainability on education with the ultimate goal of transforming the above school unit into a "Sustainable School", as an innovation in the schools of Drama.

The research questions that this research will try to answer are the following:

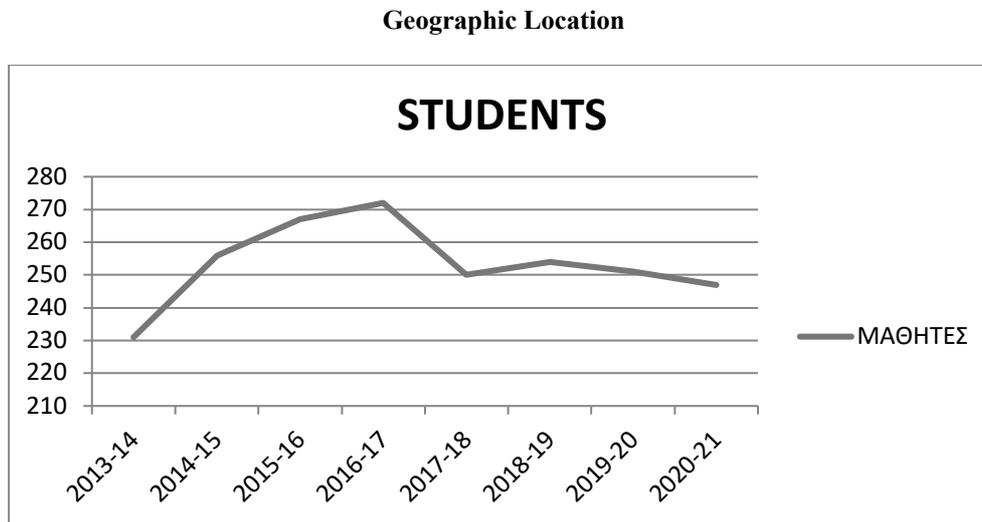
1. How important is the role of the Headmaster in the adoption and utilization of Educational Marketing?
2. How willing are teachers to use Marketing to help upgrade the quality of the educational product, promoting sustainability?
3. How important is the submission of opinions and the participation of parents in the educational process, especially with regard to the distribution (promotion) of a school innovation?
4. What is the degree of attractiveness that Marketing will bring to the school unit?
5. What are the tools and strategies that the school unit will use to enable Marketing to function effectively?
6. What are the negative factors that prevent the exploitation of Marketing?
7. How useful is the analysis of the internal and external environment, as a first step of Marketing, in the school units of the city of Drama?
8. How important a role does the formation of the school space play as a means of attracting and achieving goals?

Based on the above research questions, the research hypotheses arise:

1. If teachers in public education and the headteacher are not willing to use the Marketing teacher in their school unit, then they will hardly be able to promote and promote innovative practices .
2. If the degree of attractiveness of marketing, the tools and strategies to be used is explored, then Marketing can work effectively.

3. If parents are involved in the educational process by submitting their views, this will work positively in promoting the school.
4. If the configuration of the school space is not appropriate, then it will not be a means of attracting.
5. If the negative factors that prevent Marketing are investigated in time, then the school head will try to prevent them.

RESEARCH METHODS



Εικόνα 1The students of the 3rd Primary School Of Drama

As shown by the graph above, since 2013 there has been an upward trend in student growth with a peak in 2016-17. This is explained by the increased reconstruction in the area of Panorama of Drama at that time (the children of this settlement are enrolled in the 3rd Board of Drama). New families, without children, built permanent residences and so the number of children in this school unit gradually increased. This settlement is characterized by a high educational-socio-economic level and this gives it a relative economic stability.

Studying the history, location and 'clientele' of this school we find that it is a school unit that is of great interest for years to come. The main purpose of the development of this Marketing plan is to contribute to the development of the school unit, promoting sustainability in education and transforming the school into "Sustainable", a school friendly, democratic and environmentally friendly. Apart from the above, the aim remains the assurance of the continuation of the development of the existing services and its recognition, through the implementation of innovative actions, with the ultimate goal of attracting additional students. The main objective of the school is personal development, the provision of equal opportunities and the improvement of learning outcomes for each student individually.

Present situational analysis

The headmaster is one of the key players in an effective school. Several studies present the importance of dynamic leadership in ensuring a proper orientation of the school. The headmaster in this particular educational unit has been in the last 9 years. This is very important because he knows exactly the needs, the gaps, the staff, the parents of the school and so he has built a deep and meaningful relationship. He is a charismatic leader, extroverted, conscientious with developed empathy and quite a pioneer. When necessary, it responds promptly and successfully to changes and always motivates teachers, taking into account their characteristics, to achieve the goals set, leaving as his message "I am with you, I watch what is happening."

His vision is a school where students will not be bored, that teachers will not hesitate to innovate, that parents will not hesitate to participate. His vision is the 'sustainable' school. With personal involvement he was informed about the "sustainable school" and shortly before the end of the school year he informed all the staff of the school. Naturally, some people were thrilled, since already as a school there are actions related to sustainability and some hesitated or were completely opposed. As a

charismatic leader he tried to convince those who feared this change, mainly because of limited knowledge of what exactly "sustainable school" means.

The frequent movement of teachers of a school unit, reduces the effectiveness of the school and negatively affects the morale of the staff and the performance of the students. This particular school for the last ten years, as mentioned above, consists mainly of stable staff with specializations and extensive experience. Every year they participate in in-service trainings in order to modernize their working method. In the school, a particularly favorable, cooperative atmosphere has developed among colleagues but also among teachers and the headteacher. These kinds of collegial relationships have contributed to the creation of mutual trust, create a sense of collective responsibility and of course improve the communication between them.

The meetings of the School Teachers Board are held every week, so that all teachers are informed about issues of the school. Of course, in addition to the scheduled meetings, there are also extraordinary meetings when the circumstances require it. Also regular are the visits of the Coordinator of Education in order to excellent cooperation and help the learning process.

Moreover, programs of Health Education, Environmental Education (visits to the CCI) and Emotional Education are developed by all classes. This year (2020-21) the school, within the framework of the Erasmus program in which it participates and collaborates with 4 other European countries, has been involved with sustainability for the first time. Composters, vegetable gardens, photovoltaic models, wind farms and hydroelectric plants have been built. Plays, songs and constructions were all presented to parents and the local community in a celebration open to all. The aim of the school unit is through the similar actions that will take place next year (2021-22) to certify the school with the "Sustainable School Label".

Through the above programs, the school opens its doors to parents ensuring an effective communication, which is also a necessary element of a "sustainable" school. Parents are informed about the goals of the school, about the teaching methods, about the progress of their children, they talk to both the headmaster and the teachers themselves.

Such a favorable climate creates in the students a sense of community, consolidates in them the belief that they are acceptable to the community, develops the social spirit and mutual acceptance. Basketball, football and volleyball teams of our school as well as the choir promote all the above, teaching children healthy competition, the importance of effort and participation, respect for the rules and mutual trust.

In the school there is a room for informatics, visual arts, music, a lending library and a library within each class as well as an indoor gymnasium. Each class is equipped with a computer with internet access and a projector. In the courtyard there are basketball and volleyball courts as well as a large area of pine trees. The school and its actions can be known through the website <https://3dim-dramas.gr>. It is worth noting that over the years the school has built a very good reputation.

However, one of the biggest needs – the school's threat is the floor of the yard, which is not the most suitable and safe for children's play. Of course, many efforts have been made to secure the required resources and according to the latest news, we hope that the reconstruction of this will begin soon. The biggest threat at the moment, however, for the school is the low birth rate, not in this area but in general.

All of the above are included in the following SWOT analysis:



Εικόνα 1 Swot Analysis of the 3rd Primary School of Drama

Research Sample

When conducting a survey, the sample is of great importance. The bigger it is, the more reliable the research is. Access to the sample is also an important factor. (Cohen, et al., 2008).

For the needs of the survey, there was stratified sampling since the respondents were exclusively teachers of primary education of the Prefecture of Drama. Initially, the school heads of these schools were informed about the purpose of the research and the questionnaire was forwarded to the teachers of all school units. The final sample is one hundred and seventy-seven (177) teachers.

Means of Data Collection

The questionnaire was the means of data collection chosen for this survey. Questionnaires are very often used in surveys to collect a large number of responses without the physical presence of the respondent. They can be individually or even in groups, answered separately by each one and are anonymous. (Skittidis & Koiliari, 2006)

They consist of open-ended and closed-ended questions, with the latter being easier to answer since they are multiple-choice or with evaluation scales. It is also easier to analyze them statistically as they are answered more honestly. On the contrary, in open-ended questions, coding is difficult, but the views of the survey participants are more clearly and freely reflected.

At this point, it should be noted that there was a reluctance of teachers to participate, anticipating the large number of surveys that have been done in recent times, as well as their fatigue from the period of distance education due to the pandemic. More willing were teachers who already hold a master's degree as they know how important the response of colleagues is.

Another obstacle to the completion of the questionnaire observed in my school unit was the contrary view of some colleagues towards Marketing within the school units. However, since they were informed that in an investigation all opinions, even negative ones, should be collected, they agreed to respond.

The questionnaire

The degree of structuring and the degree of immediacy or masking are two factors that affect the completion of the questionnaire. (Stathakopoulos, 2005) In this research there was a high degree of immediacy as the purpose of the research becomes clear from the beginning. It also has a high degree of structuring with standardized questions that are easily answered by the respondents. The

questionnaire consists of questions that have also been used in the research of Mrs. Tagalaki, Mrs. Togia, and Mrs. Roiba.

As already mentioned, the questionnaire concerned teachers, teachers and specialties, from the elementary schools of the prefecture of Drama. His topic was: "Educational Marketing in the 3rd Board of Drama. The influences of sustainability on education" and it was anonymous.

The time it took to collect the questionnaires was 3 months. From early April to early July 2021. The questionnaire was constructed with Google forms and distributed through the e-mail addresses of the county's teachers.

The questionnaire (see Annex) is divided into four sections and consists of 31 closed-ended questions. It includes dichotomous questions (with the ability to answer "yes" or "no"), a Likert scale (graduated scale: "not at all", "a little", "enough", "a lot" "a lot"), as well as multiple choice.

The first unit contains general elements of the questionnaire, the topic and the purpose of the survey. The second unit, which is the largest, includes 20 questions related to the knowledge that exists about Educational Marketing and its adoption in school units, both by teachers and by the school head. In the introductory part of the unit is given the definition of "Educational Marketing", so that those who do not know the definition at all can continue in the completion of the questionnaire. The third unit concerns sustainability in education and the "Sustainable School". It consists of 5 questions. Finally, the fourth unit includes 7 questions concerning demographics, level of study and service data.

The time taken to complete the questionnaire on average was 7 to 10 minutes.

RESULTS

As far as demographics are concerned, there is a greater number of responses from women, who also show a greater preference for the teaching profession. Most of the respondents are over 50 years of age, so the population of participants is characterized by many years of experience (over 15 years). Moreover, most teachers serve in schools of 9/th -12/h with an organic position, which gives stability to the teaching staff, constituting a great advantage for each school. In addition, 72 out of 177 hold a master's degree. This large percentage is attributed to the search for additional education due to great competition but also due to distance studies.

Teachers' knowledge of Educational Marketing is very poor, making it almost unknown. 63% don't know the Marketing training at all or know a little. Their training is low, stating that only 23% have received a relevant training. However, interest in seminars tends to be significant. It is worth noting here that about 42% of the participants do not seek or pursue a little innovation in their schools. In other words, there is inexperience in the application of innovative practices and new trends. Thus, it is important for teachers to leave behind their concerns and fears regarding Marketing, and to realize how important its contribution is to schools, and not only to businesses. (concerns Research question 2)

Regarding the role of the head teacher, 69% of teachers consider him to be a very or very important factor in both the adoption and utilization of educational Marketing. In addition, a fairly large percentage (56.5%) of those surveyed characterize the principal's interest in integrating marketing into school culture as low or moderate. This behavior is mainly explained by the fact that priority that most principals show in the conduct of the daily life of the school. (Lacassis, 2007) Another reason why the interest of the school heads is not great, is the lack of training (Diveris, et al., 2008) So we find that while the role of the director is important, the director himself does not show the corresponding interest in the utilization of educational Marketing. (concerns Research Question 1)

The active participation of parents in the school process acts as a driving force since they acquire additional skills, are sensitized to environmental, social issues, thus helping themselves to better understand what a school needs to be effective. Regarding parents and their relationship with the school, teachers believe that Marketing can help them communicate and collaborate, to a fairly large extent (76%). Moreover, about half (47%) believe that for the school unit to measure the satisfaction that parents feel from it is quite important. As far as the promotion of innovation is concerned, the percentage that considers cooperation with the Parents' Association to be very or very important is

53%. Besides, as Brito & Waller (1994) states, "there is no better way to educate children than to strengthen the abilities of parents to educate them themselves" (it concerns Research Question 3)

Regarding the satisfaction of the participants with their school unit, the cooperation with the Parents' Association and the material and technical infrastructure seem to be gaining ground with 74.6% and 74% respectively, compared to innovative practices that do not have such a high satisfaction rate (65%), and building facilities (58.8%), highlighting once again the need for improvement of building facilities, since it is an important factor in the attractiveness of 'customers'. As a result, 65.5% agree or fully agree with the fact that by promoting an innovative action with the help of Marketing, attractiveness is increased and therefore additional funding is approved. Although as noted above, teachers do not feel very satisfied with the innovative actions of their schools, about half (56%) consider that innovative programs differentiate the school much or too much from the rest. The very good cooperation between teachers of a school unit, which utilizes Marketing, leads the participants to agree or agree completely (69.5%), that it contributes to the attractiveness of the school. Therefore, with the proper use of educational Marketing, we also increase the attractiveness of the school, since innovative actions will be carried out by teachers with very good relations with each other, which will lead to additional funding in order to strengthen those elements of school units that do not adequately satisfy teachers. (concerns Research Question 4)

In order for Marketing to work effectively, there are some tools that seem to help. The largest percentage (95.5%) is attributed to the cooperation between teachers, considering it quite or very important since in order for a school unit to succeed in cooperating with the external environment of the school, the internal relations must first be excellent. The cooperation of teachers with their students and the general culture of the school also attract a large percentage (about 91%). A large percentage (78%) consider the promotion of the school unit through the website, the internet and the local press to be an important tool for the school's attractiveness. On the contrary, the search for sponsors and donations to schools is another divisive point. Only 48.6% agree or fully agree on the need to seek private sponsorships in order to implement innovative ideas in schools. (is about Research Question 5)

The teachers surveyed consider as a fairly important deterrent the lack of time (46.9%), the existence of conflicts between the goals set by the school and the personal goals of each (46.3%) and the existence of conflicts between members (41.2 %). The most important factor that prevents the implementation of Marketing is the lack of training (74%), followed by mobile staff (61.6%) and bureaucracy (54.8%). If these negative factors can be eliminated or even gradually reduced, marketing in education will surely open up new avenues. (relates to Research Question 6)

Regarding the image of the school as a means of attracting, 49.7% of teachers consider it very/ very important. About 80% of respondents consider attractive classrooms to be the most important factor affecting the configuration of the school space and 73% to be adequately logistical equipment. In conclusion, certainly the role of shaping the school space is a tool in achieving goals and attracting. (about Research Question 8)

The aim of the 3rd grade is to transform it into a "Sustainable School". It is very gratifying that the percentage of teachers who know what a 'Sustainable School' is reaches 83.6 %. Of course, there is also a large percentage who agree or agree completely on the need for training on sustainability, because many people associate this concept only with the environmental sector, without knowing its implications for society and the economy. Finally, it is promising that about 54% consider the "Sustainable School" to be an innovation and would love to teach in a school unit that has been certified with the Sustainable School Label.

IMPLICATIONS

Confirmation/ Rejection of research cases

1. If teachers in public education and the headteacher are not willing to use the Marketing teacher in their school unit, then they will hardly be able to promote and promote innovative practices – The hypothesis is confirmed as it was proved by the research most of them are not aware of it, making their training necessary.

2. If the degree of attractiveness brought about by marketing, the tools and the strategies that will be used is investigated, then Marketing can work effectively – The hypothesis is confirmed since there is a

large percentage that they receive satisfaction from their school unit based on elements that make up its attractiveness. Also important are the percentages of teachers who agree that the attractiveness of the school unit benefits it. On the tools/strategies, there were also high percentages of preference for specific tools.

3. If parents are involved in the educational process, by submitting their views, this will work positively in promoting the school – The hypothesis is confirmed since the percentage that marketing is considered a good tool, which can strengthen the cooperation between parents and teachers is quite high. More generally, from all the questions concerning the participation of parents, a positive attitude emerges from teachers as well.

4. If the configuration of the school space is not appropriate, then it will not be a means of attraction – The hypothesis is confirmed by Table 12, which shows a correlation between the image of the school and some factors.

5. If the negative factors that prevent Marketing are investigated in time, then the headmaster of the school unit will try to prevent them - the case is rejected as the research has shown that the principal's interest in marketing was characterized as low or moderate even though the inhibitors are identified every year.

Proposals

The literature review highlights the fact that from the implementation of a marketing plan, a school unit benefits enormously. As Kotler and Fox (1985) report, these benefits are the fulfillment of the school's goals, the increase of customer satisfaction, efficiency and the attraction of financial resources. With the above, a school is able to cope with the needs of the time, to stand out but also to maintain.

This research initially highlighted the need for training on educational marketing, regardless of the years of service. The position of the Ministry of Education in the organization of such seminars is decisive.

The term is unknown to the majority of teachers as well as its philosophy, leaving unexploited a great aid in their hands. It was found that with the appropriate planning a school unit can promote innovative practices, gain the interest of students, parents, colleagues and the local community in general and generally enhance the quality of all its services.

Another proposal is the training of parents for their participation in school society, as a sustainable school is also based on good relationship and interaction with parents. This can be achieved by educating the teachers themselves about the ways in which they can work with parents. (Fullan, 1992)

The prospect of a sustainable school requires changing the culture of the school, putting teachers, principals, students, parents, education coordinators as companions on the journey of sustainability, thus offering a better future to our children. It is incumbent on all of us to ensure quality education by modernizing teaching methods, with buildings in accordance with the principles of sustainability and with the school being cooperative and open to all. A very positive sign is the inclusion of sustainability in the Skills Workshops that will start from the 2021-22 school year.

Finally, it would be legitimate to continue the research after three years, to see whether the principles of sustainability continue to be respected in this school after certification and whether the participation of pupils is still as enthusiastic. An important element would be the organization of workshops during these years, where this innovative program of transforming the school into a sustainable one will be presented.

Believing that the 3rd Primary School, utilizing Marketing, can stand out by offering an innovation, we hope to become a model for the rest of the schools, paving the way towards the utilization of educational Marketing and sustainability in education. We hope to pave the way for a better tomorrow not only in schools in the county but in the fulfillment of an ultimate goal, towards a sustainable society.

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INTRODUCTION OF MARKETING IN GREEK PUBLIC EDUCATION

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ABSTRACT

In today's society of constant competition and the constant need for further development of businesses and organizations, marketing is taking up more and more space in their operation (American Marketing Association, 2008). Of course, marketing is now being applied more and more intensively and with greater frequency in public education, despite the significant restrictions imposed by the legislation in force in the context of the operation of public schools (Foskett, N., 2002). The above reasonably raises the question of whether marketing should be introduced into public education and, if so, how. A question that is also addressed in this presentation, highlighting the results obtained from my thesis.

Key Words: Marketing, Greek Public Education.

PURPOSE

The main purpose of the research is to highlight the dynamic extension attempted through the study on the introduction of marketing in Public Education. For this reason, the attitudes, positions and opinions of the participants regarding the mentioned perspective are examined. In addition, an attempt is made to formulate the benefits that can be brought about by the introduction of marketing in Greek Public School.

The basic purpose of a private educational unit is to provide high quality educational services that not only equip students with knowledge and skills but also to identify, develop and highlight the special aptitudes and talents of its students.

From the above, the question arises as to whether or not marketing should be introduced in Public Education and if so, how. A question that is also addressed in this thesis by recording the views and attitudes of the participants.

Finally, the ultimate goal is to highlight all those practices that, with the contribution of marketing, help the further development of private schools in general and the introduction of marketing in public education. It is worth emphasising at this point that marketing in public education can work in developing a cooperative climate and mutual assistance between schools at home and abroad.

RESEARCH METHODS

To implement the research part of this thesis I used the forms from my account at google.mail - Gmail. By utilizing this facility the research questionnaire was created.

Subsequently, the resulting hyperlink was distributed via email and social media to teachers in both private and public education in order to meet the diversity required for the needs of the research. Significant input was received from those participants who have worked in both private and public education.

The hyperlink included not only the questionnaire and the instructions for completing it, but also the corresponding thank you note to the participants. In addition, an affirmation of anonymity of the participants was recorded.

The survey was carried out between 27 July and 10 August. During this period, responses from 111 respondents were collected. After the above mentioned date the questionnaire was 'locked' in order to avoid adding responses that would not be included in the survey results.

Finally, the survey was carried out at a national level in order to avoid any limitations related to geographical boundaries.

For the purposes of this thesis, a questionnaire was chosen as the research data collection tool for this thesis. The questionnaire was created in order to collect those responses that correspond to the research questions formulated above.

It was created and distributed in such a way as to facilitate the respondents' responses within a reasonable yet short time frame. For this reason, 42 questions were recorded. 41 of which were answered by selecting the answer to multiple choice questions or by selecting the answer to questions where the answer is given on a Likert scale. All questions were created, as already mentioned, with the Google Forms tool.

An important advantage of the described tool is the fact that no exceptional or specialized knowledge of computer use is required either from the creator or from the respondents.

Another advantage has to do with the way it is distributed. The hyperlink resulting from the creation of the questionnaire can be easily distributed via e-mail or social media. Specifically, email, Facebook and Instagram were utilized to distribute the questionnaire.

In addition, sending the link to respondents included, in addition to the participants' privacy assurance statement, a thank you for their participation and a request for further distribution to teachers. This further expanded the population participating in the survey and thus avoided geographical limitations. In addition, the advantages of this questionnaire creation tool include two further factors. The first refers to the fact that in case a respondent skipped a question, there was the possibility of an automatic reminder, which further facilitated the survey. The second factor refers to the fact that the questionnaire can be answered from any smart device, such as a smartphone or tablet as long as there is access to the internet and not only from a computer.

Finally, just as important as the aforementioned is the ability of the tool to export the research results to a Microsoft Excel file which in turn can easily be downloaded - uploaded to the Statistical Package for the Social Sciences (SPSS) program, where the decoding of the research results was done.

The analysis of the primary data generated through the present study was carried out with the statistical analysis program SPSS version 26.0.

Data tables and various graphs such as pie charts and bar graphs were utilized to make the data more complete in order to make the data obtained clear.

At the next level, the capabilities of the statistical analysis program SPSS 26.0 were utilized for comparative statistical analysis and making correlations. Thus, tools such as analysis of variance - ANOVA method and χ^2 statistical test were used in order to verify statistically significant correlations. The selection of the above tests was based on the variables studied each time. Specifically, analysis of variance - ANOVA method is utilized to correlate one quantitative and one qualitative variable. In contrast, the χ^2 statistical test is utilized for the correlation of two qualitative variables.

However, in order to establish the validity of the questionnaire responses of the questionnaire and the above statistical analysis through ANOVA analysis of variance and χ^2 statistical test, the Cronbach's Alpha validity tool is used. This is another test of the statistical analysis program SPSS which calculates the degree of relevance of grouped questions, which questions in turn constitute that variable on the basis of which the hypotheses of the survey are formulated and the data produced are called to provide answers.

RESULTS

A. Descriptive Visualization and Data Development

Are the studies related to marketing? (qualification, seminars, etc.)

To the 5th question about the participants' studies on marketing only 30.6% of the respondents answered positively, while 77 out of the total respondents or 69.4% answered that their studies are not related to marketing even at the level of seminar training.

In relation to the education sector, which of the following marketing strategies is considered most important?

In the education sector, 41 respondents or 36.9% chose the Market - targets strategy, an answer that stands out against the others. 27.9% of the respondents answered Advertising, while 19 respondents and 17.1% chose the Marketing Research answer. At 11.7% 13 participants indicated the option other, while 6 of them at 5.4% marked the option Sales Promotion. Only one participant, 0.9%, answered the Pricing option.

Do you think that marketing is beneficial to be introduced and implemented in Greek public schools?

A particularly high percentage of participants of 68.5% state that the introduction and implementation of marketing in public education will benefit the Greek public school. A contrary opinion is expressed by 31.5% of the respondents.

To what extent do you think that marketing can benefit the Greek Public School?

In another Likert scale graded response question, respondents choose answers in the range: answer 1 Not at all to answer 5 Very much. 30.6% choose answer 4, Very much, 22.5% choose answer 5, Very much and therefore it is concluded that 53.1% believe that the Public School will benefit from the introduction and implementation of marketing practices in Public Education. On the other hand, 16.2% of the respondents and 12.6% who selected the answers 1, Not at all and 2, little express their opposition, while 20 respondents, 18% resulted in answer 3, moderate, discerning some benefits from the introduction and implementation of marketing for Public School.

Which marketing strategy in your opinion will benefit a Public School the most?

The strategy that the participants believe will benefit a Public School the most is Promoting an educational package with a percentage of 42.3%; followed by Advertising and Targeting the Audience with the same percentage of 16.2%. Finally, respondents choose Market Research at a rate of 9.9%.

Which of the following areas do you think would benefit most from the introduction of marketing in public education?

Respondents answer that the area that would benefit the most from the introduction of marketing in Public Education is Attracting additional resources in the form of donations and not just donations with 43.2%, followed by Enhancing the reputation of the school by advertising educational activities with 33.3%, followed by Attractive school for teachers with 12.6% and finally respondents choose the Ability to attract new students with 10.8%.

To what extent do you think that public education as a whole will benefit from the implementation of marketing in public schools?

Question 40 is another Likert-scale graded response question in which respondents mark the answers by selecting responses 1 to 5, where 1 indicates Not at all and 5 indicates Very much. Specifically, a majority 55.8% or 62 of the total sample of respondents indicate that the public school would benefit significantly from the introduction of marketing in public education. More precisely, responses 4 and 5 garnered 34.2% and 21.6% of the respondents' views. The opposite view was expressed by 15.3% and 10.8% of the respondents who selected responses 1, Not at all and 2, minimally, respectively. Response 3, Moderate was selected by 18% of respondents who felt that the benefits were moderate.

How positive do you consider the introduction of marketing in public education to be?

This is another Likert graded response question with the response values defined in a similar manner to the previous question. 38.7% of the respondents marked option 4, Very much and 18% marked option 5, Very much expressing a cumulative 66.7% opinion that the introduction of marketing in Public Education will be significantly positive. A contrary view is expressed by 17.1% who answered option 1, Not at all and 9.9% who marked answer 2, Very little. Moderate attitude is expressed by 16.2% who marked answer 3, moderate contribution of marketing in Public Education.

If you know and want to, can you formulate some marketing strategies or ideas that you think would be beneficial for Public Education?

This question, which was also optional, concludes the questionnaire. In particular, 15 participants responded to this question, whose responses are recorded below, exactly as they were formulated.

- i. Advertising, actions, competitions.
- ii. Organising cultural events and allocating the proceeds to charity.
- iii. I am not aware of any such activity.
- iv. Targeting.
- v. None.
- vi. Raising funds from individuals or in the form of donations will enable the school unit to invest in the technological equipment of the school with multimedia that will help teachers in their work and give students a more modern method of teaching more attractive and promote an educational package more attractive to the school community, provided that all this educational package is passed on to the community.
- vii. I do not know.
- viii. Applying SWOT analysis.
- ix. Collaboration with local actors in the respective community in order to secure resources, participation of the school in social activities and also collaboration with individuals to connect with the labour market for the potential employees of tomorrow.
- x. Promotion of staff and student activities through school website.
- xi. 1. Sports teams 2. Social activities 3. Participation in Erasmus projects 4. Participation in projects related to market research 5. Participation in projects promoting the art of theatre education of the music scene 6. Involvement in technology.
- xii. Identify potential issues concerning the proper functioning of schools before they become real problems.
- xiii. Market research in society for skills that could be further developed in Education (how to penetrate and promote digital skills).
- xiv. Strengthening extra-curricular programmes.
- xv. Postings on social media.

B. Comparative Visualisation, Analysis and Data Development

This subsection of the survey presents the comparative data of the statistics obtained after the correlations conducted between the variables from the data collected from the participants' responses.

It is critical to note that only those correlations are reported that found statistically significant differences and at the same time help to answer the research questions posed in the previous chapter.

Research Results regarding the following variable according to the answers of the respondents and the results obtained from the data processing with the SPSS tool.

Working relationship / To what extent is marketing considered necessary in the education sector?
As found by Chi - Square test there is at least one mean that is significantly different from the others at 95% level of significance (sig. = 0.019<0.05). So, the job relationship variable significantly influences the variable on the extent to which marketing is considered necessary in the education sector according to the participants.

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	29,758 ^a	16	,019
Likelihood Ratio	29,694	16	,020
Linear-by-Linear Association	,840	1	,359
N of Valid Cases	111		

a. 18 cells (72,0%) have expected count less than 5. The minimum expected count is ,32.

Are the studies related to marketing? (qualification, seminars, etc.)/ How positive do you consider the introduction of marketing in public education?

As found from the One way ANOVA test there is no mean that is significantly different from the others at 95% level of significance (sig. = 0.275>0.05). So, the variable the studies are related to marketing does not significantly affect the variable how positive you think the introduction of marketing in Public Education is.

Do you think that marketing is beneficial to be introduced and implemented in the Greek public school?

As can be seen from the Chi - Square test, there is at least one mean that is significantly different from the others at the 95% level of significance (sig. = 0.050=0.05). In this particular case there is a marginal but significant correlation, as the degree of significance sig. = 0.05 is just above the limiting significance value of sig.<0.05. So, the variable choose whether you work in private or public education and if you have worked in both types of schools significantly affects the variable it is considered that marketing is beneficial to be introduced and implemented in the Greek public school.

Are the studies related to marketing? (qualification, seminars, etc.)/ Which of the following areas do you think would benefit most from the introduction of marketing in public education?

As can be seen from the Chi - Square test there is no mean that is significantly different from the others at 95% level of significance (sig. = 0.618>0.05). So the variable the studies are related to marketing does not significantly affect the variable which of the following areas do you think will benefit more from the introduction of marketing in Public Education.

Select whether you work in private or public education and whether you have worked in both types of schools/ Which of the following sectors do you think would benefit most from the introduction of marketing in public education?

As can be seen from the Chi - Square test there is no mean that is significantly different from the others at 95% level of significance (sig. = 0.118>0.05). So, the variable choose whether you work in private or public education and if you have worked in both types of schools does not significantly affect the variable which of the following areas you think would benefit most from the introduction of marketing in Public Education

Years of experience in the school you are currently working in;/ Which of the following areas do you think would benefit most from the introduction of marketing in Public Education?

As can be seen from the Chi - Square test, there is no mean that is significantly different from the others at the 95% significance level (sig. = 0.069>0.05). This is still a marginal value, but statistically not significant, as the significance level sig. = 0.069 although located very close to the value - limit sig. <0.05 is higher and exceeds the value - limit. So, the variable years of service in the school you are currently working in does not significantly affect the variable which of the following areas you think would benefit most from the introduction of marketing in Public Education.

IMPLICATIONS

A key conclusion drawn from the data of the present thesis is that the participants of the survey, almost 2/3 of the teachers, admittedly, have not studied or attended any training on marketing.

Despite this fact, they seem to see the importance of implementing marketing practices in Private Education and at the same time they are positive about the prospect of introducing marketing in Public Education

Moreover, despite the absence of studies around marketing, the respondents choose to answer positively about their knowledge around marketing by choosing those strategies that they know.

The survey revealed the fact that teachers regardless of gender, experience and studies around marketing consider it necessary to apply it in education as a whole. At the same time, they choose different marketing practices as the most important for the educational sector and advertising in particular stands out. At the same time, the degree to which respondents consider marketing important in the education sector in general is also identified as particularly important. In particular, the majority of teachers are characterized by their positive attitude towards the introduction of marketing in public education. It seems, after all, that marketing can make a great contribution to the optimization of the educational service provided in Public Education.

In particular, it can be seen that marketing will significantly benefit Public Education. The quality of the provided Public Education through the marketing of the educational package can be communicated

to the local and wider society and can be instrumental in optimising the provided educational service as a whole.

Furthermore, the introduction of marketing in Public Education can bring about an improvement in the finances of underfunded public schools through the provision of donations and the attraction of resources from other activities that can be hosted in public schools during non-instructional hours - evening hours.

The importance of introducing marketing into public education was overwhelmingly highlighted by this research.

The prospect of introducing marketing in Public Education is positively received by the respondents. Of course, it is clearly worth mentioning that no significant correlation emerges between teachers with or without marketing studies in relation to the area that would be most enhanced by the introduction of marketing in Public Schools and the importance of its introduction.

The area that will be most strengthened by the introduction of marketing in Public Education appears to have no direct correlation with either the years of experience of teachers in their school of employment or whether they work in public or private education.

The above conclusion follows from the plurality found in the responses regarding the sector that would benefit the most in relation to the public nature of the Greek public school and the constraints that characterize it in its operating context.

On the contrary, a direct correlation was found when respondents were asked to answer on whether they consider the introduction of marketing in public education important, regardless of course of whether they work in private or public education.

Finally, it is worth noting the conclusion drawn that the teachers who participated in the survey admittedly wish to work in schools, private or public, where marketing strategies are applied without any restrictions such as, for example, years of experience, employment relationship, marketing-related studies or their school of work, private or public.

The limitations of the survey place a limit on the degree of generalisability of the conclusions and in particular the conclusions on in-depth views/attitudes towards the introduction of marketing in public education.

This could be done through questionnaires that include open and closed-ended questions and even through interviews. At the same time, the sample could involve public teachers, who are best placed to give their views on more specific areas that would benefit from the prospect of introducing marketing in public education, the actions that would make its introduction more effective and any parameters that should be taken into account.

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EDUCATION PRACTICES AND POLICY

EVALUATION AND SELF-EVALUATION IN DAF COURSES

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ABSTRACT

How can teachers evaluate the achievement of learning goals and how can learners evaluate themselves and reflect on the lessons? The aim of this paper is to introduce and clarify the importance of evaluation and self-evaluation methods and tools used in DaF courses. To do so, a brief reference to the language proficiency levels based on the CEFR is necessary. Using these levels as guidance, teachers and learners are able to be involved in an evaluation process, such as a formal or informal evaluation, a summative or formative evaluation and most importantly a self-evaluation (e.g. ELP) process. The results of these evaluation types contribute to a high level in setting future teaching/learning goals and more.

Key Words: DaF, evaluation, CEFR, self-evaluation, ELP.

PURPOSE

The well-known acronym DaF is a German term and comes from the phrase ‘Deutsch als Fremdsprache’, which in English means ‘German as a Foreign Language’. In addition, the use of the terms ‘evaluation’ and ‘self-evaluation’ was chosen. The German terms ‘Evaluation’ and ‘Selbstevaluation’ in this case should be understood in the sense of the English terms ‘assessment’ as well as ‘self-assessment’.

Teachers teach and learners learn. But to determine if the teaching or the learning process has been achieved and progressed, evaluation methods come into play. When the term ‘evaluation’ comes to mind, we usually think of a test or an examination; as if these words were synonymous. In particular, evaluation is a generic term for examining or testing. Evaluating language skills includes as well observation, correction and praise as central tasks of the teaching/learning process. This suggests that teachers are constantly involved in some form of a planned or unplanned evaluation method during DaF courses (Grotjahn and Kleppin, 2015). Through these methods teachers are able to give learners feedback on the learning progress, something that is expected of them by the school or institution, the parents and the learners (Lundquist-Mog and Widlok, 2015). The main function of evaluation for teachers is to check if the learning goals and competencies have been successfully achieved (Bimmel et al. 2013). According to foreign language courses, learning goals relate to the three areas of: knowledge, skills and attitudes (Ende et al. 2013). During and after teaching and learning, it should be evaluated whether the learners have achieved these learning goals (Bimmel et al. 2013). The evaluation process can be performed by teachers, as one might guess, but also by learners; self-evaluation is possible and necessary. Hence, learners can train their ability to evaluate their own language skills, learning goals and progress (Ende et al. 2013). Therefore, when planning DaF courses, teachers should perceive evaluation and self-evaluation as a key part of their teaching methodology (Kontomitrou 2020). The aim of this paper is to show the most important types of evaluation and self-evaluation as well as present the methods and tools that are proposed for use in DaF courses, especially those that are usually overlooked. The research is based on scientific theories, teaching methodology (didactics) and secondary sources.

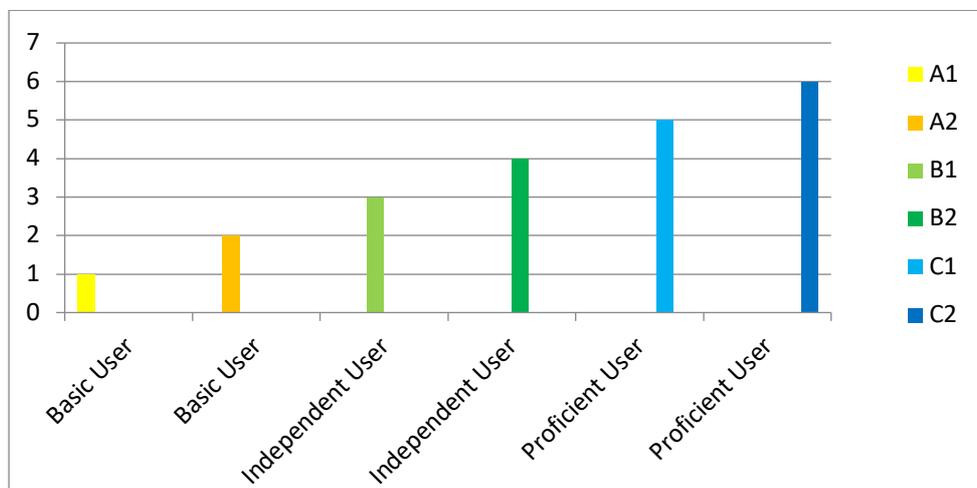
RESEARCH METHODS

Out of all evaluation types used in DaF courses this paper concentrates on the so called formal, informal, summative, formative evaluation and self-evaluation. Certain tools and characteristics of each evaluation method will be introduced.

The CEFR and formal/informal evaluation

The evaluation of the learning status and process of learners in DaF courses can be performed through various methods (Lundquist-Mog and Widlok, 2015). Through these methods teachers are able to check the progress of learning goals and recognize the teaching/learning outcomes (Bimmel et al. 2013). Apart from this, evaluation methods also allow teachers to identify the learners' language skills, i.e. the four basic language skills: reading, listening, writing and speaking. In order to estimate the language skill level of each learner, teachers must follow certain levels of language proficiency as a guide (Ende et al. 2013). The well-known CEFR, which refers to the 'Common European Framework of Reference for Languages', assists teachers to identify the language skill level of learners. The CEFR was developed by language teaching experts for the Council of Europe and serves as a guiding framework for language learning, teaching and evaluation. It was created with the aim of depicting and promoting multilingualism as well as making foreign languages comparable (Lundquist-Mog and Widlok, 2015). It is an instrument that helps design examinations, teachers-/studentsbook, curricula etc. For this reason, most workbooks, tests and portfolios are based on the CEFR (Ende et al. 2013), because it recommends the language acquisition, the language application and the language competence of learners at every level of proficiency (Bimmel et al. 2013). It describes foreign language proficiency at six levels: A1 and A2 relate to a basic user, B1 and B2 to an independent user and finally C1 and C2 relate to a proficient user of a language. Regardless whether it is about the German language or English, Italian and so on and so forth, the levels remain the same (Council of Europe, 2022a). Chart 1 below shows the different proficiency levels of language skills based on the CEFR:

Chart 1
Language skill levels according to the CEFR (ibid.)



“The CEFR [...] has developed a description of the process of mastering an unknown language by type of competence and sub-competence, using descriptors for each competence or sub-competence [...]. The levels are defined through ‘can-do’ descriptors” (ibid.: 1). These so called ‘can-do’ descriptors are also understood as the German term ‘Kann-Beschreibung’ (Grotjahn and Kleppin, 2015). They are used in a global scale and “provide teachers and curriculum planners with orientation points” (Council of Europe 2022c:1). Even so, learners as well as non-specialist users of the CEFR can clarify the language performance, skills and activities that correspond to each proficiency language level by looking at the ‘can-do’ descriptors in Table 1 below (ibid.):

Table 1

The CEFR ‘can-do’ descriptors (ibid.: 1)

PROFICIENT USER	C2	Can understand with ease virtually everything heard or read. Can summarise information from different spoken and written sources, reconstructing arguments and accounts in a coherent presentation. Can express him/herself spontaneously, very fluently and precisely, differentiating finer shades of meaning even in more complex situations.
	C1	Can understand a wide range of demanding, longer texts, and recognise implicit meaning. Can express him/herself fluently and spontaneously without much obvious searching for expressions. Can use language flexibly and effectively for social, academic and professional purposes. Can produce clear, well-structured, detailed text on complex subjects, showing controlled use of organisational patterns, connectors and cohesive devices.
INDEPENDENT USER	B2	Can understand the main ideas of complex text on both concrete and abstract topics, including technical discussions in his/her field of specialisation. Can interact with a degree of fluency and spontaneity that makes regular interaction with native speakers quite possible without strain for either party. Can produce clear, detailed text on a wide range of subjects and explain a viewpoint on a topical issue giving the advantages and disadvantages of various options.
	B1	Can understand the main points of clear standard input on familiar matters regularly encountered in work, school, leisure, etc. Can deal with most situations likely to arise whilst travelling in an area where the language is spoken. Can produce simple connected text on topics which are familiar or of personal interest. Can describe experiences and events, dreams, hopes & ambitions and briefly give reasons and explanations for opinions and plans.
BASIC USER	A2	Can understand sentences and frequently used expressions related to areas of most immediate relevance (e.g. very basic personal and family information, shopping, local geography, employment). Can communicate in simple and routine tasks requiring a simple and direct exchange of information on familiar and routine matters. Can describe in simple terms aspects of his/her background, immediate environment and matters in areas of immediate need.
	A1	Can understand and use familiar everyday expressions and very basic phrases aimed at the satisfaction of needs of a concrete type. Can introduce him/herself and others and can ask and answer questions about personal details such as where he/she lives, people he/she knows and things he/she has. Can interact in a simple way provided the other person talks slowly and clearly and is prepared to help.

Therefore, the CEFR contributes to the development of foreign language skills and also recognizes the proficiency level of learners. Teachers are able not only to set future learning goals, which aim to improve the learning process, but also to evaluate the achievement of these objectives (Ende et al. 2013). The evaluation of learning goals can be formal or informal. Formal types of evaluation refer mostly to examinations and testing. Formal exams and tests are usually linked to a specific certification degree, which learners may find very useful in their future careers. Good examples are the certificate exams of the Goethe-Institut ‘Goethe Zertifikat’, the exams of the Austrian German language diploma ‘ÖSD’, the Test of German as a foreign language ‘TestDaF’ or e.g. English certification exams such as the Cambridge Proficiency ‘CPE’, the Test Of English as a Foreign Language ‘TOEFL’ and the International English Language Testing System exam ‘IELTS’ etc. Such formal tests and exams must follow certain acceptable quality criteria; in German one may say ‘Gütekriterien’. The most important quality criterion for exams and exam tasks is validity, followed by reliability, objectivity, fairness, washback-effect, authenticity, practicality, usefulness, transparency, selectivity and difficulty/ease. All of the above quality criteria apply in a way to informal types of evaluation used in DaF courses. Informal evaluation involves less complex and less demanding procedures. However, the informal evaluation must also follow certain quality requirements. Teachers can create their own informal evaluation tools and use them planned or unplanned in the classroom. In this way, they can have an overview of the learning situation of each learner or of a group of learners (Grotjahn and Kleppin, 2015). Informal evaluation may include e.g. an oral presentation, observation or feedback etc. (Ende et al. 2013).

Summative and formative evaluation

Apart from formal or informal, evaluation can also be summative or formative. These types of methods take place in the classroom and teachers can plan them themselves. The first means assessing student’s learning, while the second involves monitoring student’s learning. Summative evaluation is specifically aimed at selective learning skills; it can take place at the end of an instructional unit, for example by grading the skills of a learner. Formative evaluation is continuously integrated into the learning process, e.g. through ongoing observation or feedback etc. (Grotjahn and Kleppin, 2015). Table 2 shows the five most important features of summative and formative evaluation:

Table 2
Five features of summative and formative evaluation (ibid.: 37)

Summative evaluation	Formative evaluation
The evaluation takes place at the end of a learning section.	The evaluation is integrated into the courses and takes place regularly.
The evaluation is a 'snapshot' of the learner's performance by the teacher.	The evaluation is often interactive, dialogical and cooperative.
The results of the evaluation provide the teacher with information as to whether and to what extent the learning goals of the respective learning section have been achieved by the learners.	The results of the evaluation are used by teachers to optimize the teaching process.
The results are reported back to the learners at a final learning day. The results usually form the basis for the selection and classification of the learners in performance levels.	To the extent that it makes sense in the teaching methodology, the results are reported back to the learners in such a way that they can optimize their own learning process.
Feedback is given through rating and grading.	Feedback tends to be descriptive and mostly not associated with a grade.

Let's take a closer look at formative evaluation and specifically at the method of observation. Teachers observe the language performance of learners during DaF courses (ibid.). Through observation of each learner individually teachers are able to recognize the achievement of learning goals. More simplified, if a learner is concentrated, active or not and so on. All of these observations should be documented by teachers, so that they can clearly identify the motivation, cooperation, independence and the achieved skills, e.g. new vocabulary, grammar rules, sentence structure and so on, of each learner (Lundquist-Mog and Widlok, 2015). For this reason, teachers should take into account the three important factors that play a key role in lesson observation (Ziebell and Schmidjell 2012: 12):

1. the goal of the observation,
2. the reason, occasion or intention of the observation,
3. the relationship between teachers and learners.

Knowing these factors, teachers can create observation sheets that follow specific observation criteria, such as the following (Lundquist-Mog and Widlok, 2015: 158):

- The learner is focused/ not focused.
- The learner understands all/most/none of the questions.
- The learner can/can partially/not at all use new words in sentences.
- The learner always/usually/never reacts appropriately to the impulses of the teacher.
- The learner asks/never asks questions if they do not understand a question.
- The learner can name all/some/no parts of a picture.
- The pronunciation is understandable/partially understandable/not understandable.
- The learner has/has no problems with intonation.

The documented observations enable teachers to detect each learner's language skills and behavior, that is the motivation, cooperation and independence (ibid.). Therefore, teachers ought to develop and improve their observation skills, so that the evaluation of learners and the learning process can be deliberately targeted (Ziebell and Schmidjell, 2012). In addition, teachers can provide feedback to their learners as well as receive feedback from them. On the one hand, teachers giving feedback to learners should not only concentrate on skills that have not yet been achieved or mastered at a good level, but also on praising those that have been accomplished as well as the overall effort, giving learners the confidence to move on with their learning process (Lundquist-Mog and Widlok, 2015). On the other hand, teachers asking for feedback can build learners' trust in them and thereby make teachers appear more reliable, which has a positive impact on the teacher-learner relationship. Receiving as well as giving direct feedback motivates the learners and it influences them positively on their learning process. It makes teachers and learners certain about the teaching/learning progress; teachers can plan the next learning goals and learners know that their teachers take care of their concerns. A good example is a Feedback-Poster with phrases, such as 'I understood/almost understood/haven't yet understood...', which can be marked by learners (Ende et al. 2013).

Self-Evaluation and the ELP

In addition to teachers, learners also set future learning goals in advance. In this case, they must have the opportunity and ability to evaluate them later, i.e. self-evaluate their learning process, outcomes and language skills as well as reflect on the lessons (Ziebell and Schmidjell 2012). Self-evaluation methods and tools are often used as part of formative evaluation. They are capable of increasing the reflection skills of learners in situations that do not have far-reaching consequences for them (Grotjahn and Kleppin, 2015). To do so, learners need to be more active and take more responsibility for their own learning (Ziebell and Schmidjell 2012). Self-evaluation promotes learner autonomy and self-responsibility. It encourages learners to be motivated and active during the courses and the learning process that continues to take place outside the classroom. Teachers can give their learners the opportunity, e.g. to check the results of a task by themselves. In particular, teachers can describe the objectives of an assignment that learners are working on and give advice on how they can directly check the results by themselves. But remember, teachers must monitor this process and intervene when necessary. After completing tasks, learners are capable to recognize which learning goals they have achieved, which they have not yet mastered so well and which they need to practice. Furthermore, a good example of a self-evaluation tool is a questionnaire, in the form of ‘i can...’ (Ende et al. 2013), such as the Table 3 below:

Table 3
Example of a self-evaluation questionnaire (Grotjahn and Kleppin, 2015: 3)

What can I do and what do I know?
What are my particular strengths and weaknesses?
Where do I need/want to improve?
How can I do this?
What do I have to/want to pay attention to (e.g. time, difficulty)?
How do I check if what I have done has helped me improve?
What other decisions do I make and how do I monitor success?

Another well-known self-evaluation tool used in DaF courses is the European Language Portfolio, i.e. the ELP. It is a global instrument created by language teaching experts for the Council of Europe, which promotes foreign language learning (Ende et al. 2013). It is also based on the CEFR and follows all proficiency levels that determine the language skills of learners (Lundquist-Mog and Widlok, 2015). “The ultimate aim of the ELP is to support and improve the learning and teaching of languages. [...] [It] encourages learners to take responsibility for their learning[, it] [...] helps the teacher to cope with heterogeneous groups[, it] [...] helps to make progress visible and increases learner satisfaction[, it] [...] promotes communication within the class by providing a common language [and] [...] it puts learning into a wider European context [and so on]” (Council of Europe, 2022b: 1). A simplified version of an ELP consists of three parts: The Language Passport, the Language Biography and the Dossier (ibid.), as Table 4 shows:

Table 4
A simplified version of an ELP (ibid.)

1	Language Passport	Learners introduce themselves.
2	Language Biography	Learners note their achieved skills.
3	Dossier	Learners document the new skills they have mastered.

By filling out the ELP during the learning of a foreign language, learners have the opportunity to collect and document their achieved skills, language learning experiences, reflections on the lessons and their own work (Lundquist-Mog and Widlok, 2015). Hence, learners are being encouraged to autonomous learning, self-responsibility, self-motivation and self-evaluation. It should be emphasized that the ELP belongs only to the learners. But it also allows teachers to review the learners’ progress and eventually draw conclusions for the next learning goal (Ende et al. 2013). In this way, teachers can obtain feedback on the learning status from the learners’ point of view (Lundquist-Mog and Widlok, 2015). It seems that the ELP is both a learning companion and a self-evaluation tool (Ziebell and Schmidjell 2012).

RESULTS

As a result, evaluation in all types, methods and tools, is a significant part of teaching and learning in DaF courses. Both teachers and learners can recognize the functions and later results of evaluation and self-evaluation.

The most important functions and results of evaluation for teachers are (Grotjahn and Kleppin, 2015: 12-13):

- ✓ Making a diagnosis and uncovering specific strengths/weaknesses of learners.
- ✓ Identifying which learners need special instruction and encouraging them.
- ✓ Classifying the language skill level of learners.
- ✓ Recognizing the learning progress.
- ✓ Identifying the achievement of learning goals, curricular requirements etc.
- ✓ Monitoring selection and admission.
- ✓ Creating a ranking within a group of learners.
- ✓ Awarding grades.
- ✓ Making comparison within groups.
- ✓ Giving feedback to the learners and parents.
- ✓ Motivating the learners.
- ✓ Disciplining the learners.
- ✓ Developing of learner autonomy.

The most important functions and results of evaluation for learners are (ibid.: 13):

- ✓ Getting information about their own level of performance.
- ✓ Recognizing their own learning progress through self-evaluation.
- ✓ Developing autonomous learning.
- ✓ Acquiring a certificate.

The results of evaluation determine whether teachers should continue or change their teaching plan, because learners have not yet achieved certain learning goals (Ende et al. 2013). At the same time, teachers should always be aware of the goals and functions they associate with an evaluation method or tool they use during DaF courses (Grotjahn and Kleppin, 2015). The reason behind it, is that different types of evaluation are connected to specific learning goals and outcomes (Bimmel et al. 2013). Teachers can also optimize these methods according to the learning needs of each learner, in order to achieve better results (Kontomitrou 2020). But they should also consider that the process of evaluation requires instructional time and lesson planning. In addition, teachers need to teach their learners how to self-evaluate their learning process (Ende et al. 2013).

However, there are certain objections/difficulties regarding self-evaluation (Grotjahn and Kleppin, 2015: 140-141):

- It is harder to be done with an oral task.
- Learners tend to overestimate their language ability.
- Learners tend to underestimate their language ability.

On the one hand, self-evaluation is indeed easier with a written task than with an oral one, because learners can look at their own notes again and have more time for evaluation. On the other hand, many times teachers tend to evaluate the oral competence of learners who are rather reserved in class. A self-evaluation method may sensitize teachers to observe learners who may be better at writing than speaking. Knowing this, teachers can help their learners accordingly. Over time they can also help and teach their learners how to estimate their own learning ability properly. Equally important is the fact that self-evaluation has no effect on learners' grades and it actually encourages learners to learn autonomously as well as control and monitor their own learning process (ibid.). As a result of self-evaluation, learner autonomy is supported by working with self-evaluation tools, such as the ELP, because (Ziebell and Schmidjell 2012: 92):

- ✓ The learners can independently describe personal learning goals.
- ✓ The learners can follow their own learning paths and work largely autonomously.
- ✓ Learners can document their own learning outcomes in the ELP.
- ✓ Learners can evaluate their learning outcomes using the CEFR proficiency language levels.

By using the ELP, learners realize that learning is their own responsibility. The documentations they keep provide informations about the learning goals, the processes and the outcomes. Learners can also

have an overview of their progress from a lower to a higher language level, which motivates them. The ELP is indeed one of the best self-evaluation instruments, but teachers need to remember that they must support learners and guide them as they still develop their self-evaluation skills (Brintzer et al. 2016). Regarding the use of ELP during DaF courses, teachers should also take into account certain points (Lundquist-Mog and Widlok, 2015: 164-165):

- Sufficient time must be scheduled in the lesson plan for the regular processing of the ELP.
- The templates in the portfolio can only be edited once the topic/vocabulary has been taught/learned.
- The ELP is not a learning or practice material.
- Teachers should be present if the learners have questions about completing the portfolio, but only if the learners need help.
- It belongs to the learners.
- Teachers should schedule when learners are allowed to show their portfolios in the classroom.
- Teachers should schedule specific hours when the learners will discuss the results with the teacher.
- The ELP has nothing to do with measuring performance, so teachers are not allowed to use the portfolios as a basis for grading.

In conclusion, evaluation and self-evaluation take place in different ways and at different points during DaF courses. Despite some objections or difficulties, the benefits and necessity of them seem more important and valid. Thus, these methods and tools allow teachers and learners to set future learning goals and help check the learning progress, outcomes and more. It is a process that must be organized systematically and repeatedly during DaF courses, as the secondary sources highlight (ibid.).

IMPLICATIONS

Evaluation, in all its types, as well as self-evaluation are not just about grading, testing or certifying a learner and their language skills. It is an ongoing process that can be undertaken by both teachers and learners, which has a great impact on the teacher-learner relationship. Therefore, teachers and learners should be able to observe, document and reflect on the learning process, as well as communicate with each other. In addition, if one estimates evaluation and self-evaluation methods and tools used in DaF courses from an educational policy perspective and from a practical point of view, then further functions and benefits should be mentioned (Grotjahn and Kleppin, 2015: 12-13):

- ✓ Comparison of larger educational units.
- ✓ Review of educational policy goals.
- ✓ Positive influence on the lesson.

A suggestion for a future research would be the combination of the theory proven in this paper and praxis. In particular, a primary research, i.e. a case study, which will show the impact of evaluation and self-evaluation methods as well as tools e.g. used in DaF courses in a Greek area like Thessaloniki. In detail, this future research can use questionnaires addressed not only to teachers but also to learners. The results of the experiences, opinions and concerns of both sides can contribute to the evolution of evaluation and self-evaluation in DaF courses. It may also include a further investigation of alternative evaluation types, such as the peer-evaluation method etc., or study specific evaluation tools intended for each basic language skill: reading, listening, writing and speaking. The researcher should take into account the age of the learners' group, language skill levels and whether the teachers and learners come from a public school or a private institute, as they may pursue different curricula or objectives. Besides DaF courses and other foreign language lessons, evaluation and self-evaluation methods can be used also in other learning courses such as mathematics or chemistry etc., if they are adapted accordingly to the needs of these courses. This hypothesis can also be considered as a future research suggestion, i.e. research on whether teachers/learners in other school subjects use these types of evaluation and self-evaluation as frequently as in DaF courses.

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ONLINE EDUCATION

DIGITAL LIBRARIES AS A BASIC MEANS OF LEARNING DURING THE PERIOD OF COVID-19 PANDEMIC

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ABSTRACT

This paper is a theoretical review of the historical course of libraries, with an emphasis on the special role of "Digital Libraries" in critical times for humanity, such as the Covid-19 pandemic. It aims to present the key factors that have contributed to the evolution of traditional libraries (especially, in recent decades) and to highlight the Libraries that exist in an electronic environment. In fact, the latter took on an important role during the period of forced incarceration of citizens, operating as a basic means of learning and entertainment, adopted by institutions of Education. Therefore, the rebirth of traditional libraries in digital has functioned as an absolute necessity in this critical period.

Key Words: Library, Education, Technology, Literature, Covid-19.

PURPOSE

The study aims to present the determinants that led to the evolution of common-traditional libraries and the need to create "*Digital Libraries*", able to serve the new needs of the modern western individual. Also, the advantages of a digital library over the traditional one are listed. Particular emphasis is placed on the useful operation of electronic libraries in critical and dangerous times (pandemic Covid-19), as they were a basic means of learning and entertainment for individuals. In this way, they acted as an important lever to escape from the ominous reality, while protecting the mental health of the citizens, who were experiencing the suffocating cycle of the unpredictable –for the time– pandemic.

RESEARCH METHODS

The present study is a theoretical review of the historical course of Libraries, with an emphasis on the special role of "*Digital Libraries*" in times of subversive humanity, such as the unprecedented Covid-19 pandemic, which suddenly spread rapidly and caused significant losses in human lives, while still testing both the psychosomatic human resilience and the socio-economic and political structures of societies worldwide.

In particular, the role of "*Digital Libraries*" in Education (public and private) is studied in this crucial phase that modern citizens have experienced and are experiencing.

Introduction

Origin of the term "*Library*"

The term "*Library*" comes from the compound ancient Greek word "*Library*" ("*book*" / book + case < tithimi). In English it prevailed as "*library*", in French as "*bibliothèque*" and in Polish as "*biblioteka*" (compound word-language loan from the Greek word), while in German as "*bucherei*".

A brief overview of the history of libraries

As early as the third millennium, in the cultures of the East, as a library space, it means a special space where rich archival and literary material was kept and classified.

In the first phase, archival libraries were annexed to palace complexes or temples, under the full supervision of kings and priests (elitist management of the book and knowledge). Therefore, there was a lack of autonomy and self-action of the libraries, while the content of their collections was clearly oriented to the standards of the kings and the official Church. Gradually, an evolution was observed, with the creation of private libraries in the Greek world (from Ionia to Lower Italy). At the same time, many collections of books were included in philosophical schools (e.g. Miletus). In this way, the book's role as a necessary means of education and cultural expression emerged and ceased to be a means of promoting political and religious power. In terms of public access to it, at this time, it is now free for all people (principles of democracy). The institution of libraries developed especially during the Alexandrian Age (Staikos, 2020), influenced the Roman culture, while at the same time private and public libraries were created (1st century BC).

During the Christian era, there was an abandonment of the institution of libraries for ideological reasons (conservative, religious character of the collections). The book then took a different form, as it was transformed from a papyrus scroll into parchment code (Codex Claromontanus = bilingual, Greek-Latin). From now on, the body of knowledge is the Church (regression in the course of the book, knowledge and libraries).

Towards the end of the 14th century, the appearance of the first humanist centers is observed, with the restoration of the institution of the private, royal and public library and the construction of specially designed spaces for the hosting of this material. At the same time, the development of Typography led to the printing of a variety of books (by members of the aristocracy and Church officials) and the creation of libraries in the universities of Italy, Padua and Paris.

During the 17th century, National Libraries were established in Western Europe, with the proliferation of their collections (including monastic libraries as part of the national ones). Their architectural line follows the rules of the Baroque.

During the 19th century, the development of America and the organization of university centers led to changes in the aims of libraries, with the acquisition of printed books depicting the course of the entire European tradition from the ancient Greek philosophers to the intellectuals of the Western Enlightenment (Voltaire, Rousseau etc.).

The outbreak of World War II also resulted in the destruction of many libraries in Western and Eastern Europe. Gradually, the necessity of their re-establishment and the creation of National Libraries is deemed imperative. The main result of this project is the promotion of cultural identity through libraries.

Main part

The Modern Traditional Library – Its Purposes / Roles

The term "*Library*", in the traditional sense, means a closed, very specific environment, where important and rare files, collections of books, magazines, vinyl records are classified and archived by topic or by author (in printed and electronic form), c/d, while –at the same time– the lending and inter-lending department, the space for reading books, information works, as well as the room with the computers operate. That is, a library means both the specific space and the material it has, as well as the services it offers. There, various events take place, such as, for example, book presentations, creative writing workshops, clubs for reading prose and poetry, theatrical performances or, in a children's library, performances and storytelling, etc. At the same time, the physical presence of the responsible librarian, the readers, the lending public and the contributors of these events is considered necessary. A library can be private or public. The libraries are divided into: Academic, School, Popular, Primary, National.

- Every large government agency (eg a hospital) has a special library to serve the readers and, most importantly, the needs for enrichment of knowledge of its staff. Thus, for example, a hospital or a law library (special library) operates with the primary goal of informing the public about medical and legal changes. That is why the special libraries welcome a very specific audience (doctors, nursing staff and respectively judges, lawyers, trainee lawyers), remaining almost closed to the general public.

- As for the roles of a library, in general, it is a complex cultural organization, with a number of constantly changing roles, various processes and services offered (Evans, Amodeo and Carter, 1992):
- Basically and over time, the library has a purely informational purpose, seeking to transmit to readers and more generally, to its visitors, a reliable and authentic, recorded knowledge.
- Contributes to the information and lifelong learning of the public, complementing the knowledge provided by an educational organization.
- It is a pillar of social contact and socializing of different people.
- It is the bridge between the cultures, morals and customs of all peoples.
- It is a basic source of entertainment, with the development of actions, events, creative writing days, theatrical performances, etc.

The "Digital Library" – Aims / Roles

Various terms mentioned in the "Digital Library"

The "*Digital Libraries*" perfectly serve the new needs of the citizens. "*Digital Library*" means the electronic library (electronic library), the virtual library (virtual library, ie intangible, intangible-real library), the hybrid library and the one that does not have building infrastructure (Toraki, 2002). It is about the evolution of the traditional (natural) library, in its effort to preserve and save from the wear and tear of time and other factors valuable works (usually of informative character) in digital form (Kambatza, 2018).

Periods where the term "Digital Library" is found

The concept of the "*Digital Library*" was first coined in 1945, in a work by Vannemar Bush, who invented a mechanical device based on microfilms. In 1965, the term "*Library of the future*" was adopted by J. C. R. Licklider, which referred to a very specific type of library based entirely on computers. Next, the terms "*supernatural*" and "*superspace*" are coined by Ted Nelson. Finally, the term "*Digital Library*" (which has prevailed to date), is due to the Digital Libraries Initiative (1994).

In the modern age of Technology and direct internet access, the library (as a pre-eminent, basic cultural pillar) acquires a broader role, as it takes care of:

- Collection of non-printed information material, old and rare maps, archives of previous centuries which are available for reading to the public in digital form, after special processing (for reasons of protection – not exposing them to light, human touch, etc).
- Recording and collection of valuable material, which was scattered, unclassified and in danger of being lost or destroyed.

Offering complex information services.

- Providing access to diverse, current and high quality cognitive content.
- Contribute to the understanding of social change.
- Improving training results.

The library, eventually, becomes a creator and treasure of digital content, adopting all the elements of its previous form (the traditional library).

In this way, readers-virtual visitors:

- They become witnesses of different eras (Apostolidou, 2012).
- They come in contact with socio-political events that marked their country and the world in general.
- They know unknown aspects of important personalities.
- Participate in a cultural intoxication, as they are able to know customs, traditions, cultures of all ethnicities.
- They acquire information training skills and thus, participate in the creation of the knowledge society.

This evolution of libraries is in line with the significant changes (over the last decades) in urban centers around the world. The consequence of this is a significant change in the structure and role of Libraries. In addition, the need to collect, preserve and disseminate rare archives of the cultural heritage of many peoples became apparent, which in their simple-non-electronic form were in danger of being destroyed and not disseminated to the general public (for the reasons mentioned above). The role of libraries is now being upgraded. This shift (apart from the new socio-political conditions) is also due to the new situation due to the Covid-19 pandemic.

Reasons that contributed to the creation of the "Digital Libraries"

During the 1990s, there was an increase in state spending on universities, and there were constant changes in information technology, with new pedagogical directions (new pedagogical model =

student-centered education, according to the model of the humanitarian model). As a result, there is a significant change in the role of libraries, with a *"re-approximation of the roles and responsibilities of librarians in the educational and information process"* (Virkus and Metsar, 2004: 294-295).

In the 21st century, the evolution of libraries offers new services to readers. Gradually, distance learning and ICT-based learning are being introduced, while the new role of libraries makes them a key *"scientific intermediary"* in the educational process (their role is now essential). The collection, management and provision of educational materials (with the support of distance education) turns the library into an educational resource to support non-formal learning and self-learning activities (Odfrey, 1999); the library is now becoming an important pillar of lifelong learning (Kambatza, 2018; Kambatza, 2019).

The Nature of a "Digital Library"

A *"Digital Library"* refers to a distributed computing environment, which simplifies the functions of creating, storing, managing and reusing digital material, while allowing multiple source searches, multiple source searches, information retrieval, retrieval of information, data mining on a global internet.

In particular, for the period of the Covid-19 pandemic that we are going through, the role of this type of library is very important and perfectly harmonized with the new needs and living conditions, as the reader:

- It can safely be fully informed from the computer on various issues.
- Has minimal financial cost for the electronic equipment required by its electronic access.
- Has no mobility problems, even if it is located in border areas (where a traditional library is missing) or has mobility, health, lack of time, etc. problems (Apostolidou, 2012).

Conditions for the existence of a "Digital Library"

However, in order for a *"Digital Library"* to exist, certain conditions must be met:

- To have the appropriate electronic equipment on the part of the reader.
- Have the appropriate technology and know-how (on both sides) to support such an effort.
- Have qualified staff available to prepare, support and facilitate access to this electronic material, etc.

Benefits of distance education provided with the assistance of a "Digital Library"

1. As one of the main goals of this advanced form of library is to utilize the material for the preservation and dissemination of the history and heritage of the peoples, the online reader is fully informed about all this. After all, *"books share the fate of societies of which they are an integral part"* (Bauman, 2000: 4). In addition, through the reading of various literary works that he chooses, at the same time, he has fun in his own house. In addition, the concept of interculturalism is cultivated (Janson and Janson, 2009) and the conflicts of learners with different cultural identities are significantly mitigated.

2. Digital material functions as a key learning tool in the context of Education, as during the pandemic period pupils and students can search for material from the internet, in the context of doing a task or exercise. And in fact, without compromising their health security.

3. Access to information through a *"Digital Library"* (eg contact with a literary work that is transferred theatrically, participation in virtual and interactive narratives, participation in poetry or short story reading clubs), constitutes a secure act of information and –at the same time– a form of complex entertainment for the virtual reader-visitor.

4. Also, during the online lesson, it is possible to view authentic sources by the teacher himself in order to make the taught material more understandable.

5. At the same time, the power of the image works positively and the information provided becomes more comprehensible by the pupil / student.

6. During the pandemic and the distance and asynchronous education (through systems-software webex, zoom, e-school, moodle etc.), the collaborative-collective spirit was cultivated, as pupils and students were doing group work, exchanged views via the internet, participated in meetings and assemblies with their teachers, etc.

7. With the assistance of e-learning, online conferences with very interesting topics were held.

8. With e-learning, the attendance of students, especially in classes, increased significantly, as there was no longer the inhibitory factor of movement and waste of time. A sufficient portion of working students or students with increased family responsibilities was added to the number of participants.

9. Finally, significant time is ensured, due to the non-necessity of movement of pupils and students in institutions to attend courses.

10. An interactive learning model (interaction relationships) is cultivated with a focus on the learner and a companion teacher.

Of course, distance education alone can not be considered a panacea, despite the fact that it comes to fill gaps, which have been recorded by conventional educational practices (Karoulis, 2000; Res, 2004). Also, the traditional role of the academic library is not negated, which is characterized as the "heart" of the academic community (Bokos, 2002: 246-257; Simmonds & Andaleeb, 2001: 1).

RESULTS AND DISCUSSION

Therefore, the evolution of Technology and the evolution and harmonious coexistence of traditional and digital type libraries met key needs (educational, professional, social, etc) in this critical period of humanity, the Covid-19 pandemic.

In the face of this scourge that threatened and eventually destroyed human lives, creating at the same time various socio-economic upheavals and inequalities, the need for knowledge enrichment and lifelong learning was not stopped and circumvented, as Technology and "Digital Books" (as authentic pillars of civilization) contributed significantly in this direction.

The reading educational public (pupils, students and teachers) resorted to the advanced means of Technology and safely managed to continue their work. Moreover, as in previous times of crisis (economic, socio-cultural, cultural), he found there a safe spiritual refuge and a saving means of creative entertainment in times of psychosis, full of insecurity and uncertainty about the future. After all, according to Thomas Carlyle, "*in the books we find the soul of the past year. The echo of the past, when the body and the material elements that make it up, have been completely lost like a dream*".

IMPLICATIONS

In the future, whether this pandemic continues to threaten humanity or disappears altogether, just as it did, the educational community (and society in general) will need to consider the significant benefits of distance education and the services of a "Digital Library" and to implement (with the consent of the State) a mixed model of teaching and learning (combination of living and distance learning). At the same time, Technology (which is constantly evolving and offering new services to its users) will contribute to the consolidation and further recognition of the role of "Digital Libraries", indicating new roles of the latter. Citizens and in particular, members of the educational community and the State will now have the experience of online teaching and the necessary familiarity and relevant know-how. Any doubts about a similar test (until recently, unprecedented) will disappear and in their place, there will be trust and positive attitude towards the positive benefits of digital use in teaching. In the consciousness of all the actors of education (teachers-trainees-State) will be established the view that the parallel use of the services of traditional and digital libraries really contributes to the learning and to the integrated provision of knowledge to the receivers.

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PERCEPTIONS OF TEACHERS AND STUDENTS ABOUT MOBILE LEARNING

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ABSTRACT

The main aim of this study was the investigation of the perceptions of teachers of all specialties and students who participated in the European program Erasmus + KA229 entitled "innovation and Mobile Learning", and code project 2018-1-EL01-KA229-047747_1, from September 2018 to August 2020. The individual aims of the research were a) to record the teachers' and students' opinions on Mobile Learning and b) to ascertain the teachers' differences of opinion with regard to gender c) to investigate the extent to which the activities of the program affect the abilities and skills of the participants related to mobile learning, d) the participants evaluate the main mobile learning applications used in the activities of the program. 30 teachers and 84 students from different schools of 5 countries (Greece, Bulgaria, Spain, Turkey and Italy) participated in the research, responding to a structured five-leveled Likert scale questionnaire, which was distributed via e-mail to them. From the factor analysis of the major components, three factors emerged: a) "M-Learning is appropriate for teaching and learning" (11 questions), b) "M-Learning is proper for the communication between the teacher and student" (6 questions) and c) "M-Learning is suitable for personal use" (7 questions). The structural validity and reliability of the questionnaire for the Greek population was also ascertained. From the results, it was evident that both the teachers and students had a positive attitude towards Mobile Learning and they had the intention to use mobile devices in their teaching. However, a statistically significant difference in the participants' opinions in relation to gender was not discovered.

Key Words: Mobile Learning, mobile devices, Secondary School teachers' perceptions.

INTRODUCTION

1.1. What is mobile learning?

According to the literature, many definitions have been given for the concept of mobile learning without a generally accepted definition.

TECHNOLOGY-FOCUSED DEFINITION-

Any activity that allows individuals to be more productive when consuming, interacting with, or creating information, mediated through a compact digital portable device that the individual carries on a regular basis, has reliable connectivity, and fits in a pocket or purse. (eLearning Guild 360 Mobile Learning Research Report, 2007)

LEARNER-FOCUSED DEFINITIONS

- "Mobile learning is when the learning experience that you're trying to design happens to be out and about in the world." (Dikkers, 2012)
- Learning that arises in the course of person-to-person mobile communication. (Nyiri, 2002)

1.2. Teachers 'and students' perceptions of M-Learning.

Learning using mobile devices is highly valued effective, because it is easily accessible and provides direct exchange of knowledge and information on a wide range of topics constantly enriched, is collaborative, work exchange is done almost directly by electronic transfer of files and data and provides immediate feedback, and comments and advice. Lonsdale, et al., (2003).

It can replace bulky books with the electronic availability of specific, selected modules for learning, comprehension and processing, appropriate to the subject and the level of the students. In addition, this type of learning attracts the interest of students and is considered a pleasant activity but also an attractive learning environment, according to research, Nix, 2005, Trifonova A., Ronchetti M., (2004). Because of this data it can be used in education for a constructive and productive cognitive and learning process.

Learning through mobile devices is a very important and constantly evolving field of research (Baran, 2014; Mannade & Hazare, 2017). The study of teachers' perceptions and attitudes towards each innovative form of learning is essential. Acceptance of the use of M-Learning is crucial for us to be able to determine its contribution to the learning process (Baydas & Yilmaz, 2018). According to Bidin and Ziden (2013) the factors that motivate teachers to use mobile devices are their characteristics, their expectations towards these devices as well as the expected pedagogical benefits.

Advances in mobile technologies have enabled educators to send instructional messages in flexible ways. With new technologies including mobile computers, Pocket PCs, Apple iPhones, Android phones, and tablets, instructors and students can communicate through voice and image as well as text. Using mobile devices for educational purposes is becoming a common expectation of learners (Lan & Huang, 2012). For instance, Valk, Rashid, and Elder (2010) demonstrated how mobile phone-facilitated learning can give students in developing countries increased access to educational materials and services, particularly in rural and remote regions. In some previous studies on small displays (e.g., Chen et al., 2003; Maniar, Bennett, Hand, & Allan, 2008), small screen size was found to create cognitive disadvantages related to students' attention and visual perception (Kim & Kim, 2012). However, students have also reported wanting to have more options to make learning tools more convenient so they can study when and where they want to. Typically, the use of personal devices affords students' ownership of learning, which may Daesang Kim, Daniel Rueckert, Dong-Joong Kim, and Daeryong Seo Students' Perceptions and Experiences Language.

Learning & Technology lead to positive language learning experiences (Kukulka-Hulme, 2009). However, the innovation of technology-based learning (referred to in this study as Mobile Language Learning or MLL) continues to challenge educators to develop new teaching and learning methods. Unfortunately, many teachers and students resist change in teaching and learning with new technology because they do not think of themselves as part of a new learning culture. In addition, technology-oriented trainings and resources may not meet the needs of individuals in understanding the nature of learning. Stockwell (2007) argued that survey results about mobile learning (e.g., Thornton & Houser, 2002) in classroom settings will be different when the learners have a choice to use mobile devices (e.g., mobile phones) or something else (e.g., desktop PCs) outside the classroom. In later studies, Stockwell (2008, 2010) indicated that technological, pedagogical, psychological, or even environmental barriers often prevent learners from selecting mobile devices like smartphones for vocabulary learning activities, even though they have a positive view of mobile learning.

A survey of primary school teachers in Greece showed the positive attitude of teachers towards Mobile Learning and their intention to use mobile devices in their teaching. However, no statistically significant difference was found in teachers' views on gender factors, years of teaching experience and specialization, Mpoufidou (2018).

RESEARCH METHODS

The second part of this paper attempts to investigate the perceptions of teachers and students of Secondary Education who participated in the Erasmus + KA229 program for M-Learning. For this purpose, a research was designed and implemented, the results of which are presented in this chapter.

The research focuses on the views of teachers and students on the suitability of M-Learning for teaching and learning, on communication between teacher - student and students with each other as well as for personal use. In more detail, the following are examined: a) the research hypotheses related to it, b) the research methodology followed, c) the research sample, d) the method of data analysis and e) the presentation of the results.

2.1 Aims of the research

As mentioned above, the purpose of the research was to explore the perceptions of teachers and students of Secondary Education who participated in the European program Erasmus + KA229 entitled "Innovation and mobile learning", for M-Learning. The individual objectives of the research were:

- a) to record the views of participating students and teachers on Mobile Learning
- b) to identify differences of opinion of participants regarding gender
- c) to investigate the extent to which the activities of the program affect the abilities and skills of the participants related to mobile learning
- d) the participants evaluate the main mobile learning applications used in the activities of the program

For this purpose, the following research hypotheses are put to investigation:

Case.1 Teachers and students of Secondary Education consider M-Learning suitable for teaching-learning.

Case.2 Teachers and students of Secondary Education consider M-Learning suitable for teacher-student communication and students with each other.

Case.3 Teachers and students of Secondary Education consider M-Learning suitable for personal use.

Case.4 The perceptions of teachers and students of Secondary Education about M-Learning depend on the "gender" factor.

2.2 Research tools

The technique of the anonymous questionnaire was used for data collection. Two questionnaires were given to the participating teachers and students. One at the beginning of the program and one at the end to investigate any changes in perceptions. The questionnaire consisted of three distinct parts (Uzunboylu & Ozdamli, 2011). The first part concerned the demographics of the research participants (eg country, gender, age, level of education), the second part contained seven general questions related to the research topic (eg possession and use of mobile devices in teaching and personal use, level of ICT knowledge), the third part contained the main questions of the research (26 questions). The final questionnaire also contained a fourth part for the evaluation of the program activities and the main mobile learning applications used. (ANNEX).

According to the foreign questionnaire, its main part consisted of 26 questions consisting of three factors called: 1st Aim-Mobile technologies A-MTF, ("M-Learning is a suitable tool for teaching and learning") (8 questions), 2nd Appropriateness of Branch AB ("M-Learning is a suitable tool for all teachers") (9 questions) and 3rd Forms of M-Learning Application and tools Adequacy of communication FMA and TSAC ("M applications -Learning are suitable for teacher-student communication ») (9 questions). Questions about teachers' views were answered on a Likert five-point scale as follows: Strongly disagree = 1, Disagree = 2, Neither agree nor disagree = 3, Agree = 4, Strongly agree = 5.

For the weighting of the questionnaire in the Greek data and the control of the validity of the content by a team of experts of the University of Macedonia according to the postgraduate study of Despina Boufidou

The final form of the questionnaire was designed in the form of Google Forms and sent by email to the participating teachers and students through the heads of the European program of each country. The survey was conducted during the period December 2018 - June 2020 and participants could log in online throughout the day to complete the questionnaire. After collecting the answers, the data were passed and processed by the statistical package for Social Sciences (SPSS.23) and the structural validity of the questionnaire was checked with factor analysis as well as its reliability.

2.3 The research sample

The research sample consisted of

1) 30 in-service Secondary Education teachers (10 men and 20 women) aged 22 to 60 from the five countries participating in the program (Greece, Bulgaria, Spain, Turkey and Italy). Of the participants, 60% had up to 20 years of service in education, 21 (70%) work in urban schools, 6 (20%) in semi-urban schools and 2 (10%) in rural schools.

2) 84 Secondary School students (37 boys and 47 girls) mainly aged 16 to 17 from the five countries that participated in the program (Greece, Bulgaria, Spain, Turkey and Italy). Of the participants, 48 (57.1%) work in urban schools, 11 (13.1%) in semi-urban schools and 24 (28.6%) in rural schools.

2.4 Results of the research.

Students

1. Paired Samples Test were used to examine whether students changed their perceptions to 26 different variables for mobile learning in two different time measurements at the beginning and at the end of the program in which they participated. The results show that the students improved for the most part their perceptions regarding mobile learning in all the variables (26) of the questionnaire (Paired Samples Statistics). There were statistically significant differences in the perceptions of the participating students in the variables:

Table 1. Students' perceptions of mobile learning

Variables(df)	t	Sig. (2-tailed)
2 t (55)	- 3,008	0,004
3 t (55)	- 3,183	0,002
4 t (55)	- 4,498	0,000
5 t (55)	- 2,810	0,007
6 t (55)	- 2,695	0,009
11 t (55)	- 4.505	0,000
13 t (55)	- 3,444	0,001
14 t (55)	- 2,965	0,005
15 t (54)	- 4,543	0,000
17 t (54)	- 3,290	0,002
21 t (54)	- 2,695	0,009
23 t (54)	- 3,040	0,004
24 t (54)	- 2.709	0,009

- Independent Samples Test were used to investigate whether there are statistically significant differences between students, boys and girls, in the 26 key variables of the questionnaire. The results showed that: there were no statistically significant differences between people of different gender in any of the 26 variables of the questionnaire. All participants at the end of the program activities had very positive perceptions about mobile learning which in the vast majority exceeded 4 (mean > 4) on a 5-point likert scale.
- Descriptive statistics were used to investigate the extent to which the activities of the program affect the abilities and skills of the participants related to mobile learning. The results showed that there was a very positive effect on the perceptions on the skills and confidence of the participants regarding the use of mobile learning applications in the educational process. The average in each of the 7 evaluation questions was over 4.5 on a 5-point likert scale.
- Descriptive statistics were used to investigate the evaluation and preferences of the participants regarding the main mobile learning applications used in the program activities. The results showed that there was an excellent acceptance of the educational usefulness of the software used since the students rated on average more than 3.9 on a 5-point likert scale.

The most popular among the 11 applications evaluated was Kahoot, a free online program that allows teachers to easily and quickly create playful questionnaires to evaluate students in real time.

Table 2. Students' evaluation and preferences regarding the main mobile learning applications

	N	Minimum	Maximum	Mean	Std. Deviation
1.Google Forms	84	1,00	5,00	4,4286	0,90893
2.Google Docs	84	1,00	5,00	4,4286	0,97296
3.Google Maps	84	1,00	5,00	4,5476	0,89718
4.Google Earth	84	1,00	5,00	4,2619	0,98322
5.Padlet	83	1,00	5,00	4,1084	1,23971
6.Voice Thread	84	1,00	5,00	3,9405	1,27394
7.Thingling	84	1,00	5,00	4,1429	1,24323
8.Animoto	83	1,00	5,00	4,0843	1,27073
9.Nearpod	84	1,00	5,00	3,9643	1,28426
10.Kahoot	84	1,00	5,00	4,7024	0,83276
11.Rubistar	84	1,00	5,00	4,3452	0,99993
Valid N (listwise)	82				

- Teachers. Paired Samples. Test were used to examine whether teachers changed their perceptions of 26 different variables for mobile learning in two different time measurements at the beginning and end of the program in which they participated. The results conclude that the teachers improved for the most positive their already positive perceptions regarding mobile

learning in all the variables (26) of the questionnaire (Paired Samples Statistics). There were statistically significant differences in the perceptions of the participating teachers only in the variable: $t(30) = -3,195, p < 0.05$.

6. Independent Samples. Test were used to investigate whether there are statistically significant differences between male and female teachers in the 26 key variables of the questionnaire. The results showed that: there were statistically significant differences between people of different genders in the variables: 1. The M-Learning tools eliminate time and space limitation $t(28) = 3,902, p < 0.05$, 18. (M-Learning applications are convenient to share my specialized knowledge with my colleagues.) $t(28) = 2,772, p < 0.05$. All participants at the end of the program activities had very positive perceptions about mobile learning which in majority exceeded 4 (mean > 4) on a 5-point likert scale. Male teachers had a more positive approach to 25 of the 26 main questionnaire questions than women.
7. Descriptive statistics were used to investigate the extent to which the activities of the program affect the abilities and skills of the participants related to mobile learning. The results showed that there was a very positive effect on the perceptions on the skills and confidence of the participants regarding the use of mobile learning applications in the educational process. The average in each of the 6 assessment questions was over 4.3 on a 5-point likert scale.

Table 3. Teachers' evaluation of project activities

	N	Minimum	Maximum	Mean	Std. Deviation
1. Before I further my study, I had a good understanding of how learning and education would fit my job-related development.	30	3,00	5,00	4,3000	0,65126
2. My job performance improves when I apply new things that I have learned.	30	3,00	5,00	4,5333	0,57135
3. I am confident in my ability to use newly learned skills on the job.	30	3,00	5,00	4,5000	0,62972
4. This program by mobile learning experience was fun.	30	3,00	5,00	4,7333	0,52083
5. Mobile learning increases the quality of my distance education course.	30	3,00	5,00	4,7000	0,53498
6. Mobile learning has helped me pace my studies in my distance education	30	3,00	5,00	4,4667	0,73030
Valid N (listwise)	30				

8. Descriptive statistics were used to investigate the evaluation and preferences of the participants regarding the main mobile learning applications used in the program activities. The results showed that there was an excellent acceptance of the educational usefulness of the software used since the students rated on average more than 3.9 on a 5-point likert scale.

The most popular among the 11 applications they evaluated was Kahoot, a free online program that allows teachers to easily and quickly create playful questionnaires to assess students in real time.

Table 4. Teachers' evaluation and preferences regarding the main mobile learning applications

	N	Minimum	Maximum	Mean	Std. Deviation
1. Google Forms	30	3,00	5,00	4,6000	0,67466

2.Google Docs	30	4,00	5,00	4,7333	0,44978
3.Google Maps	30	3,00	5,00	4,6667	0,66089
4.Google Earth	30	3,00	5,00	4,3333	0,75810
5.Padlet	30	3,00	5,00	4,4333	0,67891
6.Voice Thread	30	3,00	5,00	4,0667	0,90719
7.Thingling	30	2,00	5,00	4,0000	1,01710
8.Animoto	30	3,00	5,00	4,2667	0,78492
9.Nearpod	30	2,00	5,00	3,9000	0,92289
10.Kahoot	30	3,00	5,00	4,7667	0,56832
11.Rubistar	30	3,00	5,00	4,2000	0,80516
Valid N (listwise)	30				

CONCLUSIONS

Today there is a continuous development of educational applications with the use of mobile devices. Therefore, it is very important to conduct research on the perceptions and attitudes of teachers in the part of introducing and utilizing M-Learning in the teaching process. Knowing the perceptions of teachers and the factors that contribute to the acceptance of such systems will help in the integration of mobile devices in the learning process.

This work has revealed that teachers and students of Secondary Education consider M-Learning applications as a suitable tool for teaching and learning. The results showed that teachers and students believe that learning through mobile devices enhances student interaction and communication between teacher and student. Finally, participants showed that they accept M-Learning applications as a suitable tool for personal use. The above perceptions of the participants did not seem to be influenced by gender. The participants positively evaluated the program in which they participated and used its applications with Kahoot at the top of their preferences.

The research found that teachers and students stated that there are many positive aspects associated with the application of this technology in secondary education, such as its speed and ease of use. Mobile-learning has great advantages and it should be encouraged. It is recommended that further studies be conducted on the impact of such technologies on secondary education using a larger number of respondents and also selecting samples representing a variety of schools. It is recommended to use this pilot study to conduct a number of case studies using mixed research methods, ie a combination of qualitative and quantitative research methodologies.

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SCHOOL LEADERSHIP

E-MARKETING STRATEGIES OF PRIVATE PRESCHOOL UNITS DURING THE PANDEMIC PERIOD

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ABSTRACT

In Greece, private pre-school education has existed since the country's inception. In the years that followed, this institution appeared to have won over a significant portion of the people, demonstrating that it has mechanisms in place to adapt to new difficulties. The current study looks at how private preschools used e-marketing methods before and during the epidemic, as well as the impact these strategies had on their performance and development. The findings of the study suggest that employing electronic marketing tactics for unit promotion and communication increases their efficiency and effectiveness.

Key Words: e-marketing, promotion, communication, private.

INTRODUCTION

E-marketing is a modern business practice that involves marketing products, services, information, and ideas via the Internet and other electronic media (El - Gohary, 2010). According to Chaffey et al. (2006), electronic marketing (E - marketing) or digital marketing (Digital marketing) is a type of marketing that encompasses not only digital media (internet, e-mail, wireless media), but also the management of digital customer data and how the internet is used in conjunction with traditional media to provide services to customers. Most firms use e-marketing tactics, which have been proved to contribute to organizational improvement and performance.

An organization through the utilization of e-marketing reaps multiple benefits such as:

- Reduction of operational costs: this is accomplished by lowering the cost of communication and advertising material, the cost of expanding the business to a new market, and the number of sellers of the business (O'Konnor & O'Keefe, 1997). It is feasible to mass-personalize the content of the web application using modern IT services. All of the above services are covered via the website and e-mail (Tsekouropoulos, 2009).

- Improve efficiency: This is accomplished by expanding the amount of available information material, providing fast and quick access to it, and lowering the cost of retrieval (O'Konnor & O'Keefe, 1997). These also aid in the enhancement of business competitiveness.

- Open access: The internet's introduction to marketing has helped to minimize, and in some cases remove, the need for intermediary networks to get a product from the company to the final recipient. Infomedianers (O' Connor and O' Keefe, 1997) are a novel type of intermediate network.

- Communication options: Businesses can use the internet to communicate their products and services in a number of ways and using digital tools. Direct communication by messages, emails, contact forms, and other means is available at no additional cost. Businesses that watch the movements of stakeholders on the website can also deliver customized content to customers that appeals to them while also reflecting their interests and online behavior (Kotler & Keller, 2016). In a manner, personalization is bolstered because each customer is addressed differently (Belidis et al., 2007). Furthermore, compared to traditional marketing, it provides better flexibility to react to each business in changing market conditions without spending additional time or money (Vlachopoulou, 2003). Furthermore, there is no restriction.

E-marketing can be implemented in a variety of ways. Each business choose the methods and procedures that best suit its requirements and capabilities (Theocharis & Tsekouropoulos, 2022). It should be mentioned that the disruptions generated by the pandemic in the Marketing environment have had an impact on marketing philosophy and tactics. For many businesses, digital marketing appeared to be a one-way street in the new climate. Marketers and entrepreneurs reconsidered their methods, which included social media, websites, web ads, search engines, and e-mail marketing (Sharma, 2020).

The instruments that are frequently employed in the industry in the case of the educational institutions evaluated in this study include:

-Online advertising: Online advertising has built a two-way communication model between business and customer, removing the one-way communication barrier. The corporate website and the media that promote it, such as banners, sponsorships, and so on, are the two types of internet advertising (Patsioura, 2007).

-Search Engine Marketing (SEM): SEM is a type of sponsored advertising (Fierro et al. 2017). It includes marketing techniques aimed at promoting websites, increasing traffic, and ultimately achieving a high ranking in search results.

- **Email Marketing:** Email marketing is a valid and profitable marketing strategy that is extensively used (Pavlov et al. 2008). Many scholars have noticed its benefits in the past, including Jackson and De Cornier (1999), who highlighted the usefulness of email in preserving consumer relationships and real-time engagement. It also offers minimal costs and digital processing that enables businesses to deliver large volumes of messages.

- **Social Media Marketing:** As the name suggests, this is internet marketing that makes use of social media. Any network or web application that allows users to produce and share texts with other users or engage in social networks is referred to as social media (Kingsnorth, 2016).

There are two ways that digital marketing for schools works. On the one hand, it makes it easier for school owners to stay updated about the market and provides them with all client information; on the other hand, it allows potential students to search for information and explore the virtual world until they find the proper school (Purwanti et al ., 2021). The research on the use and effectiveness of e-marketing in education has mostly focused on private universities and institutions in other countries (Kusumawati, 2019; Gunawan et al. 2020; Prihadini 2020; Iqbal, 2016).

PURPOSE OF THE RESEARCH AND RESEARCH QUESTIONS

The extent of study on e-marketing and its usage in private preschool education is limited, according to the literature evaluation and presentation of pertinent research (Gabbidon, 2019; Vasileiou, 2021; Yildirim, 2021). However, the findings of these studies, as well as research conducted at higher education levels, revealed that the firms' e-marketing tactics improved their efficiency and effectiveness, as well as communication and customer interactions.

The purpose of this study is to promote e-marketing methods and the outcomes of their implementation in Thessaloniki's private pre-school education units, as there are no studies in Greece that capture a clear image of the situation that characterizes private pre-school marketing tactics. The goal is to

highlight the means of e-marketing and their degree of usage and efficacy in the units before and during the epidemic by investigating the perspectives of school owners, principals, and teachers about the role of marketing in schools.

The following are the primary research questions addressed by the study:

- What is the scope of e-application marketing's in private schools prior to the pandemic?
- What was the extent of e-marketing use and efficacy during the pandemic, and what requirements arose?

OVERVIEW OF BIBLIOGRAPHY

A survey on the role of the internet in the school's connection with clients and the public was done in a Slovenian school center in 2008 (Tankosi & Trnav evi, 2008). The study included questions about: - communication, such as how instructors see the internet (website, email) for communicating with clients in comparison to traditional marketing tools, and -teacher effectiveness in the process of using the internet for communication. Teachers rate the internet third among 12 tools in terms of importance in communication when compared to traditional tools, according to the research. They believe that personal contact and physical encounters with customers are techniques that the internet cannot replace. Regarding the effectiveness of teachers, the results showed that it depends on the confidence shown by teachers and the knowledge they have in the use of online tools. Three categories of teachers emerged depending on the positions they expressed on the subject. The first category consisting of teachers with a technical background seemed to be more active and effective in communicating with parents through the use of the website and email. The second category included teachers with a social background who showed no interest in using online tools, as they believe that they do not contribute to the effectiveness of communication and do not replace physical presence. The third category consisted of teachers who had a social background and were interested in the communication functions of the internet, but did not have the knowledge to use them.

Iqbal (2016) research in Pakistan also aimed to explore the perceptions of private school principals about the use of digital media in educational marketing services and the strategies they used to market their school. Research has shown that, although there are a number of digital tools for promoting educational services, managers believe that staff and especially teachers have a crucial role to play in promoting the organization. It was also found that the schools did not have specialized staff for marketing planning and teachers are required to apply the word-of-mouth method (WOM) to promote their services. Also, although educators find digital tools particularly useful, they are not able to use and utilize them in a digital network. However, similar research by Tuten and Marks (2012) showed that in countries such as India, Spain and Sri Lanka there were principals who followed the new trends of competition of other educational systems and used in their schools mainly social media.

The Mandal & Swamy (2020) B - Schools Survey in India examined the preferences of parents and students for the digital media they use for their academic pursuits. The results showed that most people visit the website of an educational institution, while also a large percentage reported that they are informed through social media.

According to Alvarez and Garcia's (2017) research in Spain on the use of the website and its contribution to the school's image, schools gain from the website's marketing opportunities.

Gabbidon (2019) conducted research on the use of social media in small pre-school settings. The findings revealed that social media usage was linked to advertising, promotion, and new subscriptions. They mostly used them in schools to communicate with parents and provide information. When asked what benefits the school gets from using social media, the respondents said that it helps to increase enrollment and maintain relationships with parents. When asked what factors prohibit them from getting adopted by a school, the most common response was a lack of time, with a minor percentage claiming that they lacked topic knowledge.

The only study of the application of digital marketing in private schools during the pandemic period and for pre-school education is Yildirim's (Yildirim, 2021), which looks at ways to use communication between teachers and parents during the pandemic period. The findings revealed that the primary forms of communication cited by the teachers were telephone conversation, video calling, and social

networking (Facebook, Instagram). Logistics and network connectivity were also required. Free and strong internet connection, as well as in-service teacher training, are two of the steps they propose for continuously high-quality distant education.

Following the examples of research conducted in universities and schools around the world, it is clear that research on the application and efficacy of e-marketing in private preschools is limited and focuses on specific technologies such as the website and social media. It's worth noting that, with the exception of educational marketing, similar polls at private and public schools in Greece have not been published (Tsekouropoulos et al, 2021).

The current study adds to the body of knowledge by giving a case study of e-marketing in Thessaloniki's private preschool units, which can aid in the documentation of the scenario in which the private schools were led and the actions implemented within a specified time period. Raising this topic is especially crucial because private pre-school education is an important part of the framework of a modern and developed society, and it affects a large portion of the population. Furthermore, by examining the perspectives of private pre-school school owners, principals, and instructors, the needs and maybe shortcomings of these organizations will be emphasized, resulting in an effort to improve them.

RESEARCH METHODS

The population involved in the research was the teaching staff, the directors and owners of the private educational units of pre-school education in Thessaloniki. The sample frame used for the sampling was the official catalogs of the private Kindergartens of Thessaloniki of the Primary Education of East and West Thessaloniki (<https://dipe-a.Thess.Sch.Gr/> <https://dipe-v-thess.thess.sch.gr/>) and the lists of pre-school care units of the Municipalities of Thessaloniki that were available from EETAA in the framework of the NSRF action "Harmonization of family and professional life 2020-2021" (<https://www.eetaa.gr/>). The sampling method followed was probability sampling, which can be controlled in terms of its parameters and allows the conclusions to be generalized (Cohen & Manion, 1997; Zafeiropoulos, 2005). More specifically, the type of probability sampling was Stratified sampling (Creswell, 2016): the stratum was selected by the population of Thessaloniki, which includes the teaching staff, the owners and directors only of the private preschool education.

Sample research, which lasted from 1/4/2021 to 1/6/2021, consisted of a total of 110 participants from the private preschool structures of East and West Thessaloniki. A low response rate was observed, although questionnaires were sent to more than 100 units. The factor that may have contributed to the limitation of the sample is the time period in which the survey was conducted, as the period in which the questionnaires were sent was during the period of the prohibition of the operation of school structures. Many of the Kindergartens were down, so correspondence with the questionnaire may not have been forwarded to all staff.

The survey was a primary, quantitative survey and included the use of a questionnaire with predefined questions and answer options. Google's tool was used to create the electronic questionnaire Forms. The questionnaires were sent by e-mail to the school e-mail addresses. The types of questions were closed type, as they allow quantitative analyzes to be made and it is more possible to compare the answers between the respondents (Zafeiropoulos, 2005). The questions of the questionnaire are based on the research tools of doctoral dissertations related to the subject, as well as on the study of foreign articles. Specifically, the sources of the questionnaire are: Gounaris, S. (1994), IME-GSEVEE (2021), IME-GSEVEE (2020), Patsioura F. (2007).

The questionnaire data was collected in an excel table, and then descriptive and inductive statistical analysis of certain variables were performed using the statistical tool spss. A Kolmogorov-Smirnov regularity test was used to determine the proper descriptive measures, with a level of statistical significance of 5%. The test findings revealed that the ordinal variables did not follow a normal distribution and had considerable asymmetry. As a result, the median value and intra-quadratic range were chosen as descriptive metrics for the variables in question. Inductive statistics were used to analyze the relationships between the variables under investigation. The operative variables did not follow a normal distribution at each level of the categorical variable, hence non-parametric control (Kruskal Wallis) was utilized instead of Kolmogorov-Smirnov control. The Monte Carlo approach was

also used to study the association between two category variables. Finally, a statistical significance level of 5% was chosen.

A pilot survey of ten respondents was done to confirm the questionnaire's validity and to look for any ambiguities or misplaced questions. The questionnaire was then corrected and formatted to its final state. The existence of internal consistency between the questions that comprised the individual axes of the questionnaire was assessed in order to ensure the reliability of the current quantitative research. For the entire questionnaire, the Cronbach rate value alpha was found to be 0.95. As a result, it indicates that the questions in this questionnaire have a high level of internal consistency.

RESULTS AND DISCUSSION

Regarding the investigation of the application of e-marketing in private pre-school schools before the pandemic period, the results show that in terms of e-marketing tools generally used by organizations before the pandemic, the website, e-mail and the mobile phone / sms applications .

More specifically, according to **Table 1**, regarding the means they use to communicate with their parents, they mention telephone and live communication as their primary means. These results show that before the pandemic period, organizations communicating with parents showed more confidence in traditional marketing media, while digital media were used to a lesser extent. The same applies from the parents according to the answers of the respondents. The results are in line with the findings of a survey in Slovenia in 2008 (Tankosić & Trnavčevič, 2008), which showed that teachers rank personal contact as the first factor in communicating with clients, while digital tools rank in third place.

Table 1
E-marketing tools for the organization to communicate with parents before the pandemic and appropriate descriptive measures

Note for each of the following tools the degree to which your organization utilizes it to communicate with parents before the pandemic period:	Frequency (Percentage %)					Δ.T (E.E) *
	Ms. dome	A little bit	Moderate	Very	Too much	
Electronic the foundry / email	1 0.9%	13 11.8%	22 20.0%	37 33.6%	37 33.6%	4 (1)
Use of mobile phone / sms applications	8 7.3%	14 12.7%	32 29.1%	29 26.4%	27 24.5%	4 (2)
Telephone communication	-	-	17 15.5%	35 31.8%	58 52.7%	5 (1)
Live communication	1 0.9%	1 0.9%	11 10.0%	39 35.5%	58 52.7%	5 (1)
Form of communication through our website	24 21.8%	27 24.5%	30 27.3%	22 20.0%	7 6.4%	3 (2)
Social media networking	10 9.1%	13 11.8%	19 17.3%	34 30.9%	34 30.9%	4 (2)
Sending emails	19 17.3%	13 11.8%	21 19.1%	34 30.9%	23 20.9%	4 (2)
Specific electronic platform	57 51.8%	14 12.7%	18 16.4%	9 8.2%	12 10.9%	1 (2)

* DT: Average price, EU: Intra-quadratic range

On the contrary, as shown in **Table 2**, regarding the means they used to promote the organization, the respondents answered that social media was the tool they used most and followed the email, the website and the sending of brochures / information material. Teachers believe that e-marketing contributes "a lot" to the organization's performance and increase interest and enrollment (**Table 3**). This shows that for the advertising of the organizations they realized the dynamic and effective contribution of the social media. Their preferences are in complete agreement with the preferences of the teachers of Gabbidon's research (2019), where the teachers considered that social media contribute to advertising and increasing subscriptions. However, in Gabbidon's research, organizations made

more use of social media and their communication with parents, which is not the case in the present study.

Table 2
E-marketing tools for advertising, promoting and promoting new services to parents and the market before the pandemic and appropriate descriptive measures

For each of the following tools, note the extent to which your organization utilizes it to advertise, promote, and promote new services to parents and the market before the pandemic:	Frequency (Percentage %)					Δ. T (E. E) *
	Ms. dome	A little bit	Moderate a	Very	Too much	
Electronic the foundry / email	4 3.6%	12 10.9%	19 17.3%	43 39.1%	32 29.1%	4 (1)
Use of mobile phone / sms applications	12 10.9%	18 16.4%	24 21.8%	34 30.9%	22 20.0%	4 (2)
Online advertising _ _	33 30.0%	11 10.0%	16 14.5%	33 30.0%	17 15.5%	3 (3)
Social media _ networking	10 9.1%	6 5.5%	14 12.7%	32 29.1%	48 43.6%	4 (2)
Events - participation in actions with other organizations	7 6.4%	11 10.0%	38 34.5%	35 31.8%	19 17.3%	3 (1)
Mission _ leaflets - brochure hardware	10 9.1%	14 12.7%	26 23.6%	38 34.5%	22 20.0%	4 (1)
Radiophonic for advertising	64 58.2%	17 15.5%	14 12.7%	10 9.1%	5 4.5%	1 (1)
Television for advertising _	76 69.1%	11 10.0%	12 10.9%	7 6.4%	4 3.6%	1 (2)
Website a	6 5.5%	3 2.7%	17 15.5%	34 30.9%	50 45.5%	4 (1)

* DT: Average price, EU: Intra-quadratic range

Table 3
The degree of contribution of e-marketing to each of the following factors, before the pandemic period, and appropriate descriptive measures of these

Note the extent to which e-marketing contributed to each of the following factors before the pandemic	Frequency (Percentage %)						Δ. T (E. E) *
	Not I know / I do not answer	Ms. dome	A little bit	Moderate a	Very	Too much	
In his income _ _ org _	35 31.8%	1 0.9%	9 8.2%	24 21.8%	35 31.8%	6 5.5%	4 (4)

To increase the number of customers	15 13.6%	-	17 15.5%	20 18.2%	44 40.0%	14 12.7%	5 (2)
In the performance and improvement of the organism	15 13.6%	-	13 11.8%	23 20.9%	41 37.3%	18 16.4%	5 (2)
In the advertising and promotion of the organization	11 10.0%	1 0.9%	6 5.5%	17 15.5%	37 33.6%	38 34.5%	5 (2)
Increasing interest from potential customers	11 10.0%	2 1.8%	5 4.5%	20 18.2%	37 33.6%	35 31.8%	5 (2)
To reduce costs from the application of other means of advertising and communication	28 25.5%	3 2.7%	17 15.5%	18 16.4%	35 31.8%	9 8.2%	4 (4)
In customer satisfaction _	16 14.5%	1 0.9%	3 2.7%	19 17.3%	35 31.8%	36 32.7%	5 (2)

* DT: Average price, EU: Intra-quadratic range

Regarding the second research question concerning the degree of utilization and effectiveness of e-marketing in organizations during the pandemic period and the needs identified during this period, it was found that greater needs arose for the strengthening of network connectivity, redesign and enrichment. Website and redesign of internet advertising techniques (Table 4). Also, the rental / purchase of an educational platform was very much needed. This need is explained by the fact that private kindergartens were called upon to implement distance education, so since it was found from the answers in the 2nd^{axis} that the largest percentage did not use an educational platform, they had to settle the issue of distance education. The above findings confirm the results of previous research (Daniel, 2020; Imram et Ahmed, 2020; Peterson et Thankom, 2020; Yildirim, 2021) where significant shortcomings in learning platforms and network connectivity were identified. However, in the case of schools in Thessaloniki, the need for staff training and the purchase of technological equipment come as second priorities, in contrast to the results of the above research which show that the two above needs were also the main needs.

Table 4
The needs that arose in the organizations during the pandemic and appropriate descriptive measures thereof

During the pandemic, report in relation to your organization and e-marketing, the extent to which needs have arisen in the following areas. Specifically in _ organization was observed :	Frequency (Percentage %)					Δ.T (E.E) *
	Ms. dome	A little bit	Moderate a	Very	Too much	
Need for logistical-technological equipment	5 4.5%	13 11.8%	17 15.5%	51 46.4%	24 21.8%	4 (1)
Need for ICT staff training and digital knowledge	7 6.4%	8 7.3%	22 20.0%	37 33.6%	36 32.7%	4 (2)
Need to buy-rent an educational platform and information systems	14 12.7%	11 10.0%	13 11.8%	30 27.3%	42 38.2%	4 (2)
Need to boost your internet connection	15 13.6%	3 2.7%	17 15.5%	28 25.5%	47 42.7%	4 (2)
Need for redesign - website enrichment	11 10.0%	4 3.6%	13 11.8%	30 27.3%	52 47.3%	4 (2)

Need to redesign online advertising and advertising techniques	10 9.1%	6 5.5%	17 15.5%	29 26.4%	48 43.6%	4 (2)
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* DT: Average price, EU: Intra-quadratic range

Regarding the e-marketing tools used in the pandemic and the extent to which they contributed to the effectiveness of the schools in Thessaloniki, the results show that social media were used "too much", followed by the website and the email. However, when asked about the effectiveness of the school in advertising and promotion, the largest percentage considered the use of e-mail and then the use of social media to be very important. (Table 5). In a similar study by Yildirim (2021), the results showed that the tools most used by teachers to communicate with parents were telephone communication, video calling and then social media. Based on the above, it is found that the schools of Thessaloniki follow the new trend that is formed in the application of e-marketing and the dynamic entry of digital tools. The social media as found from previous research (Mandal & Swamy, 2020; Gabbidon, 2019) help enhance the effectiveness of organizations.

Table 5

The degree of effectiveness regarding the advertising and promotion of the organization in the following areas, during the pandemic period and appropriate descriptive measures thereof

For the pandemic period please note the degree of effectiveness regarding the organization's advertising and promotion in the following areas:	Frequency (Percentage %)					Δ.T (E.E) *
	Ms. dome	A little bit	Modera te a	Very	Too much _	
Presentation of the organization and its services through the website	5 4.5%	10 9.1%	26 23.6%	45 40.9%	24 21.8%	4 (1)
Communication with parents and clients in real time via chat or forum	11 10.0%	3 2.7%	30 27.3%	32 29.1%	34 30.9%	4 (5)
Satisfactory presentation of services through social media	8 7.3%	7 6.4%	19 17.3%	38 34.5%	38 34.5%	4 (2)
Immediate response and promotion of useful information via email	4 3.6%	5 4.5%	17 15.5%	32 29.1%	52 47.3%	4 (1)

* DT: Average price, EU: Intra-quadratic range

According to the results, the majority of the units used e-marketing tools and techniques before the pandemic period, as they had realized the dynamics and effectiveness of these media, mainly social media, in the performance of the organization, in communication with customers and advertising.

Private pre-school organizations as well as other sectors of Greek society suffered the unpleasant effects of the pandemic and some units faced financial problems, such as late payment of tuition fees and late payment of staff (Vasileiou, 2021). However, even with such difficulties, organizations have managed to retain their jobs and customers through measures related to marketing strategies.

In future research, it would be interesting to look at the perspectives of parents-clients on the techniques used in private pre-school schools, as well as their level of satisfaction with the schools' performance in certain areas such as communication, advertising, and so on. Similar research has been conducted in other countries, and it investigates parents' perspectives on private school rules.

The spread of digital transformation did not seem to leave preschools unaffected. The units demonstrated flexibility and adaptability to the new reality as shaped by the Covid- 19 pandemic. They realized the effectiveness of social media and website for the performance of their organization and used these media for advertising and communication. However, the research also revealed important needs that arose, such as network connectivity and lack of logistics equipment, which needs occupied most educational organizations, as found by the research. It is encouraging, however, that there has been no increase in the need for staff training in digital technologies, which means that, compared to previous research, teachers' digital skills have been enhanced.

In conclusion, it is worth mentioning that private pre-school education in Greece, as proved by the historical background, is an area that has shown great resilience and adaptability to new and difficult situations. A significant part of the population supports and invests in private education and trusts its structures. E-marketing and the benefits of using it can help private entities maintain and enhance their market share. At the same time, the digital transformation is proving to be able to modernize and improve the strategies and policies of organizations, in order to become innovative and pioneers of their kind.

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ADMINISTRATIVE DECISIONS/PRACTICES MAKE THE SCHOOL EFFECTIVE

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ABSTRACT

The purpose of this work is to develop a model of effective educational administration and leadership through the conceptual definition of educational administration and the understanding of the concept of leadership in school. In particular, the educational administration will be identified and demarcated and its basic functions that are vital for the smooth operation, development and efficiency of educational organizations will be identified. Management includes a set of procedures with their individual functions, which describe the behavior of administrative executives, based on principles and axioms of science (...) while, through the human resource management modern organization harmonizes the work of its various departments and is subject to quality controls processes and services it offers (Πετρίδου , 1998). Then, the concept of leadership will be analyzed, the modern models and forms in which it can be practiced in schools will be presented and the basic differences between leadership and administration will be captured. Finally, the concept of school effectiveness will be analyzed and effective ways of administration and leadership at school level will be listed, emphasizing the skills that an effective principal of a modern school unit must have. In this light, Management as a science, culture, systems and skills is the main condition for survival and the most critical success factor (Μπουραντάς, 2002). The ability to develop leadership skills as well as the ability to manage are extremely important for teachers as, in the context of their educational work, they are called to manage situations directly and effectively both within the school unit (with students, colleagues, school principal) and with the external environment (with parents, local community, representatives of institutions, etc.). At the same time, these skills enhance the professional competence and professional profile of teachers and contribute significantly to their professional development in positions of responsibility. In each case, the importance attached to the effectiveness of leadership and administration for the successful operation of school units undoubtedly is very large and reflects significant educational changes policy in recent decades. (Παπαλόη, 2012).

Key Words: educational administration , management functions , decision making , effective school administration and leadership.

INTRODUCTION

This work focuses on the analysis of educational administration and leadership as well as the effectiveness of the school unit. First, the concept of educational administration is defined and its basic functions are described at the school unit level, in an environment that is becoming increasingly complex, demanding and uncertain. The concept of leadership is analyzed, modern leadership models are developed and the differences between leadership and management are identified. Finally, the concept of school efficiency is developed and an attempt is made to connect the educational administration and its functions with the skills that the principal-leader must develop, contributing positively to the smooth operation and efficiency of the school unit.

Conceptual approach of educational administration

Management Science evolved rapidly in the 20th century, developing theoretical models and principles that interpret and predict the course, survival, and evolution of an organization's systems and functions - and not by chance. Considering that, the educational administration is defined as an action system based on the rational use of available resources (human and material) to achieve the goals of the educational organization and in particular, the provision of education in the most effective way (Saiti & Saitis, 2012), (Bush, 1986), We understand that, in the field of education, the application of models and principles of administration (management) is imperative in order for modern educational

organizations, through the proper use of resources, to achieve their goals and interact with the external environment as openly systems.

Undoubtedly, developments in the wider environment form an extremely demanding framework for the modern school which, in order to meet the challenges and survive, will have to develop mechanisms of flexibility, continuous learning, innovation, synergy and change. Therefore, it is extremely important that educators have the necessary know-how to put into practice the basic principles of management theory in a way that benefits the individual, the school and society.

Theoretical background of management

In order to understand the evolution of thinking in the field of educational administration and the way in which principals in the modern school exercise management, it is important to know the theoretical background of management science. In summary, the theories that have been developed and are applied in the field of educational administration can be categorized as follows (Theofilidis, 2012):

- **The Bureaucratic Model**

It is based on Max Weber's views on power, including elements of traditional, charismatic and rational power.

- **The Scientific Administration**

This theory is based mainly on the views of F. Taylor and is inspired by the industrial revolution of the early 20th century. Key positions in this model include increasing productivity and productivity, providing financial incentives, division of labor, and control through systematic monitoring of employee progress.

- **The Human Relations Movement**

Based on experiments conducted at Western Electric in the 1920s, Harvard University professors Elto Mayo & Fritz Roethlisberger came to a number of interesting conclusions about the relationship between productivity and working conditions. According to the human relations movement, a pleasant climate and effective communication in the workplace significantly affect employee behavior and, consequently, their performance and productivity.

- **Modern theories and trends**

Modern management thinking is based on a synthetic view of the work environment and employees, emphasizing the importance of harmonizing the formal elements of the organization (existence of rules, hierarchy, etc.) with its informal elements (relationships, communication).

Management functions

As already mentioned, the administration in the field of Education has its peculiarities, as the main goal is to improve the educational services provided through the activation of all stakeholders. Management consists of four sub-functions: planning, organization, management and control (Burandas, 2002):

Planning

It facilitates the executives to prepare the future of the organization. It is linked to decision making and goal setting and is the most basic management function. It is noted that the goals of an organization, depending on the scope and time horizon of their implementation are divided into strategic (long-term goals of the organization) and operational (the way and means of achieving strategic goals as reflected in the daily operation of the organization).

Organization

The organization as a function is connected with the creation of a structure in the educational organization and the division of the project into individual activities in order to achieve the optimal utilization of resources. Through this function the organizational chart is compiled, the levels of hierarchy and tasks are determined, the provision of specialized services by the functional units of the (central) organization is achieved (eg separation into primary & secondary education), the scope of control and coordination of individuals and responsibilities are delegated. It is noted that the Greek educational system presents many elements of bureaucratic organization as, to a large extent it is centralized and this acts as a deterrent to the level of creativity and innovation of the school unit.

Address

This function is to guide the staff to achieve organizational goals. Since the human factor is involved in this process, it is easy to see that the task of running an organization is extremely difficult. At the school level, management, as a function, refers to the effective resolution (by the principal) of issues related to human resources, in order to achieve the goals of the unit and to operate the school as an

open system. Issues such as communication, cooperation, conflict management, motivation, empowerment, coordination of work and monitoring of their progress, fall within the scope of management.

Control

This function is associated with the observance of rules and standards to ensure the implementation of the goals set by the organization. It is worth noting that the control is corrective-creative and not punitive. Through this process, the management has the ability to better monitor the progress and development of the projects and actions of the organization, to detect any deviations from the goal and to make improving interventions both at the level of employee performance and at the level of compliance with the rules.

Models and styles of school leadership

The categorization of leadership behaviors has been the subject of much research, which demonstrates the need for leadership based on models that reflect the needs of modern organizations (Fullan, 2006), (Robertson, 2008). In the context of the discussion of leadership styles that apply to the school today, we can distinguish the following as the most basic:

Transactional leadership

According to this model, there is a mutual deal between manager and subordinates (Saiti & Saitis, 2012) which is delimited through the clarification of the requirements of the position and the expectations of the organization by the individual. Consequently, at school level, the relationship of the hierarchy (principal) with the subordinates (teachers) is determined by rewards based on a specific evaluation process (Raptis and Vitsilaki, 2007), and can take the following forms:

- a) Active leadership (the principal-leader actively monitors the progress of teachers and intervenes to prevent any mistakes)
- b) passive leadership (interventions are made, if deviations from the pre-agreed goals are found)
- c) "laissez - faire" type of leadership (the leader does not have an essential role at the leadership level and does not express his / her views on teacher performance).

Distributed leadership (distributional leadership)

Distributed leadership is based on the division of tasks and responsibilities and leads to the development of individuals and the school (Theofilidis, 2012). The interaction between principal and teachers strengthens team cohesion and a sense of trust in the organization, promoting change and innovation. In this context, the principal-leader has a facilitating role: he / she makes decisions, evaluates the situation and utilizes the potential of the teachers.

Transformational leadership

This theory was formulated by Burns in the late 1970s and aims at the profound change and evolution of the organization and its members. The transformational leader has the role of mentor and mentor, he sets the example himself, he is primarily interested in formulating a vision that concerns all members of the organization and is not consumed in the simple handling of daily administrative and bureaucratic tasks.

Authentic leadership

As a concept, authenticity is linked to the authenticity of feelings, prestige and credibility. In the field of leadership, Luthans and Avolio (2003) introduced the term and associated it with self-knowledge, self-control, optimism, positive behavior and the consistency of the leader. In authentic leadership, there is a sequence of actions and ethical thinking (Yukl, 2010) and the conditions are created for the formation of a safe and healthy work environment which favors the commitment of employees. Consequently, the authentic leader is characterized by responsibility, self-discipline, honesty in communication, deep faith in values and commitment to fulfilling goals.

Leadership or administration in the school

Each organization is determined by specific characteristics and rules, which are necessary for the fulfillment of its functions and the realization of its purposes (Papaloi, 2012). In any case, the importance attached to the effectiveness of leadership and administration for the successful operation of schools is undoubtedly very great and reflects the significant changes in educational policy in recent decades. The issue of administration and leadership of educational organizations has been of particular concern to scientific research. Numerous definitions have been attributed to these two concepts (Hoy &

Miskel, 2008) which are often used as identical. Leadership is a dynamic process that is associated with the change, setting and implementation of specific goals according to the vision, personal and professional values and skills of the leader, while the management (management), refers mainly to actions aimed at effectively maintaining and managing organizational actions and structures. Leadership and management are complementary functions or roles equally necessary and important for the effectiveness of the organization. Thus, in the discussion on the delimitation of educational leadership and administration as a central issue, the term "influence" emerges and not "power". Leadership and management are complementary and interdependent concepts: management mainly deals with complexity in modern organizations, while, leadership faces the changes of the modern world (Kotter, 1990, 2001).

The concept of school efficiency

The concept of efficiency refers to the achievement of goals with the least possible waste of resources. Undoubtedly, the issue of the effectiveness of the school unit is extremely complex and diverse as the main questions are related to the specificity of the institution of education in relation to other organizations. According to the relevant literature, the interest of researchers is mainly focused on the development of two concepts: effectiveness (effectiveness) and efficiency (efficiency) (Burandas, 2002). Effectiveness is defined as the degree to which the educational unit achieves its goals, while efficiency refers mainly to the internal operation and the "sacrifices" made to achieve a result. It follows from the above that the overall effectiveness (at least in the long run) presupposes the efficiency of the school unit. In short, the effective management of an educational organization requires the observance of fundamental principles, such as the coordination of people, activities and existing means in full harmonization with the respective educational, socio-cultural and political values, needs and expectations. The need for continuous adaptation of the school unit to the challenges of the environment is directly related to the exercise of educational leadership and administration and the way in which education executives understand their role and responsibilities.

Skills of an effective school principal

In a multifaceted context, education executives are rapidly facing changes and reforms to which responding requires a high level of professionalism, knowledge, skills and responsibilities. Fluid and varied components compose the physiognomic characteristics of the new school, making the internal profile of each school unit a determining factor for the success and the development of key skills of the educational executives. In order to be effective in their work even in the most unfamiliar and paradoxical situations, principals must have the skills and knowledge and, above all, the ability to share them with teachers, investing in them and actively supporting a people-centered approach. The characteristics of effective school management are related to the skills of the principal such as stability, professionalism, the ability to inspire all actors in the educational process, the ability to create a quality learning environment, empathy and building harmonious relationships, motivating and supporting teachers and students, creating a safe and equitable learning environment, and the expansion of school-family relations (Fasouli, 2011). It is true that, today, the principal-leader is called upon to meet the challenges and demands of modern society for education, to create a common vision, to inspire, motivate and empower all members of the school community to achieve the goals, being the critical factor for the viability and evolution of the organization (Burandas, 2005), (Vakola & Nikolaou, 2012), (Bush, Bell, & Middlewood, 2010). At this point, the importance of the prestige of leaders should be emphasized, which is established through a relationship of mutual trust and recognition between the one who exercises leadership and his subordinates.

CONCLUSIONS

Based on the above, the effective principal sets the example himself, is a mentor, guides and enables teachers to act autonomously in a creative and safe environment. In addition, he is an excellent connoisseur of the context in which he is in charge, as well as of the challenges of the wider environment, he has self-knowledge, self-control and empathy and is distinguished by creativity, flexibility and generosity. Effective managers have human, technical and intellectual decision-making skills, which, in each case, interact with occasional factors (ie the characteristics of the specific context in which the manager leads) (Burandas, 2002). Clearly, the road to change in domestic education policy and the transition from managerial and bureaucratic control to a leadership & administration model based on cooperation, trust and the provision of high quality goods is certainly not an easy task.

The challenges are many both at the personal / cognitive level and at the level of socio-political and economic changes. In any case, the effectiveness of the school unit depends on the ability to be flexible, adaptable, and "open" to the needs of the wider environment. Achieving this goal requires the consent of all stakeholders and ensuring the coherence of the system. Properly trained and talented people are required, sufficient resources and leadership with an ethic that focuses on creating a high level of knowledge and the formation of independent personalities based on the common good (Papaloi & Bourandas, 2012). In conclusion, the executives of the educational machine with a vision and will for real cuts, must create those conditions that will strengthen the sense of trust in the institutions and will promote the fundamental social values, considering the school unit and those involved in the educational process as part of an open system, as a living cell of our society that is evolving and changing.

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THE ROLE OF THE DIRECTOR IN QUALITY CONTROL MANAGEMENT - EXPERIMENTAL SCHOOLS

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ABSTRACT

The basic demand of the school of the 21st century is to reform the educational work and the introduction of innovative processes. The application of TQM in education could respond to this request as it aims to improve and upgrade the quality of educational services.

The aim of the research carried out in the context of our work was to expand:

- a) If the principles of TQM are applied in the Experimental Primary Schools of the country*
- b) The views of the principals regarding their role and in relation to them indicators that ensure the quality of the school unit in which they serve.*

The research was conducted by interview with a semi-structured questionnaire and audio recording of the answers. The research shows that in the Experimental Schools of Primary Education the principles of TQM apply to certain functions of the above schools. At the same time, the weaknesses of the educational system are identified, which do not allow its complete implementation. Finally, proposals were formulated that could facilitate the implementation of the TQM in education, aiming at its improvement and upgrading.

Key Words: Management, Total Quality, primary Experimentals Schools, change, transformation.

INDEX

TQM: Total Quality Management
Total Quality Management

"Total quality management" is, at least on a theoretical level, a philosophy that could be applied with positive results in the educational sector, ensuring the high quality of educational services, but also fully meeting the modern student needs. This philosophy focuses on the needs of the student himself, giving special weight to the learning process itself (Zavlanos, 2003).

The basic principles of "total quality management" were formulated by Edward Deming, who is also the main exponent of this philosophy. Of course, it must be said that other researchers and theorists have also relied on these principles, who have also formulated their own interpretations and approaches, leading to the promotion and development of TQM, such as Joseph Juran and Crosby.

The philosophy of "Total Quality Management", despite the fact that it first appeared in the private sector and was applied mainly in the field of companies and various organizations, has aroused, especially in recent years, intense interest on the part of researchers. which raises the question of whether it could be applied in an effective way in the field of education as well.

In this context, many scholars, who come mainly from the field of Pedagogical Science and Humanities, expressed the view that the basic principles of "Total Quality Management" could be applied in the field of education, having as an ultimate goal to promote radical changes and reforms in the structure of educational systems and in the way, curricula are formed, to improve the school performance of students, to increase the productivity of the teaching staff and more effective performance of the duties of all stakeholders within the school community (Masoumeh et al., 2011).

Based on the results of a survey conducted in 1993 in the United States of America and more specifically in the region of Iowa, it was concluded that the philosophy of TQM was well applicable in schools, in a direction from side of the state optimizing the educational services provided by them to

students. Simply, as this research has shown, it is necessary to radically transform the way of operation, administration, organization and mentality within the school units, since the effective implementation of the TQM presupposes the direct participation and involvement of all individual actors within this effort (Teigland, 1993).

These findings, which were confirmed by other researches, resulted in the issue regarding the application of TQM in the educational sector gradually gaining more and more implications, something which is evident from the very large number of literature and articles that exist, both internationally and domestically (Farkhondehzadeh et al., 2013).

The role of the Director in relation to quality indicators

The principal of each school unit and the method he chooses to exercise his administrative duties play a catalytic role in the process of adopting the basic principles of the TQM within the unit he heads. The unit manager himself must far exceed himself and the expectations of others from him, acting at the same time as an effective leader, who will be able to positively influence the mentality, culture and behavior of the rest of the teaching staff, who work daily under his supervision, in order to convince them as well, for the necessity to try with all their might to achieve the goals set by him (Buranda, 2005).

Based on the vision he has for his school, in the context of his efforts, one of his main priorities should be the best possible management of the resources at his disposal, his effort to be a source of inspiration for the other staff, in order to change the way, they behave and act within the school unit (Saitis, 2011).

The deep faith of the school principal in the adoption of the new methods adopted within the principles of total quality management is crucial in order to have the desired results, since he is a role model for the rest of the teaching staff. Thus, his action and behavior should be an example to be imitated by others (Misailidis in: Sfakianaki, 2015).

PURPOSE OF THE RESEARCH AND RESEARCH QUESTIONS

The purpose of this paper is not only to present the importance of the role that the principal of each school is called to play in the performance of his duties, by simply presenting the different models and leadership styles, but to explore how which, through the adoption of the basic principles of "total quality management" is able to positively influence the mentality and behavior of teaching staff and students, so that they make every effort to achieve some common goals, guided by the most efficient operation of the school unit.

In particular, the objectives of the research are:

- a) To investigate whether the TQM principles are applied in the Experimental Primary Schools of the country.
- b) To explore the views of the principals of the Experimental schools regarding their role and in relation to the indicators that ensure the quality of the school unit in which they serve.
- c) To explore the views of teachers serving in Experimental schools, regarding the role of Principals and in relation to the indicators that ensure the quality of the school unit.

It is also being investigated the role of the Director of the Experimental Primary Schools in relation to the formation of the school culture, the quality of communication between the members of the school community, the continuous improvement of the professional development of teachers, the introduction and implementation of innovations in the school unit, utilization of modern technologies provided by the science of Informatics, the development of the social role of the school, the evaluation of the school unit, as well as the management of financial resources for the benefit of the school and the management of the pandemic.

At the same time, in the present research, the views of the teachers of the experimental schools are examined for the role of the principal in relation to the above quality indicators.

RESEARCH METHODS

The research conducted is qualitative using individual interviews.

The research population is Principals and Teachers who serve in Experimental Schools of Primary Education of the country.

The research sample can provide clear data for analysis and reflection in the field of TQM in education. For the data collection, the process of individual interview was followed, through which the direct communication with the principals and the teachers who participated in the research is attempted.

Due to the restrictive measures applicable to the pandemic and to limiting the spread of covid-19, the interviews were conducted online and the interview was recorded on a tape recorder.

The questions asked to the principals who participated in the research did not differ in terms of subject matter in relation to the questions asked to the teachers of the schools.

The duration of the research was two months. Data analysis was done with content analysis.

Principals and teachers were asked to answer specific questions about education and school. The topics of the questions were: a) Leadership, b) Professional development of teachers - Implementation of innovative actions, c) Communication - Relations with the school community, d) Cooperation with local agencies - Financial management, e) Pandemic management.

Characteristics of the research sample

The research conducted is qualitative using individual interviews. The population to which the research is addressed is six (6) Principals and five (5) Teachers who serve in Experimental Schools of Primary Education of the country.

From the sample of eleven (11) people, six (6) are Principals of Experimental Primary schools, of which three (3) men and three (3) women. The age range of the sample is mostly between 45-60 years. Regarding the educational level of the Directors, four (4) hold a postgraduate diploma and two (2) hold a doctoral diploma. The total sample of Principals has 20-30 years of service and the school unit in which they serve is 6 grades and above. The area in which they serve is Attica, Western and Northern Greece.

The rest of the sample are five (5) teachers who serve for a term in Experimental schools of primary education, specialty PE70 teachers and are (4) women and one (1) man. The age range of the sample is mostly between 40-50 years.

Regarding their educational level, four (4) hold a master's degree and one (1) holds a doctoral degree. The total sample of teachers is 15-20 years old and they serve in 6 classes and above school.

RESULTS

According to the findings of the research in the experimental schools of Primary Education, it is concluded that the principles of TQM are applied in certain areas of operation of schools and without prior training of the school community in the management model of TQM.

It is also observed that the application of the principles of the TQM is not done systematically and in an organized way, according to the proposed model of administration, however the result of the quality improvement and efficiency of the schools is obvious. It seems that the operation of the experimental schools is based on the principles of the TQM, as they aim to support the experimentation and the pilot application of educational innovations in the educational system.

In more detail, we observe that the principles of TQM apply in the following areas of experimental schools:

- Principals and teachers with scientific training and teaching ability, successfully meet both their teaching work and the increased extracurricular requirements of the school.
- They therefore have the conditions and capabilities needed to promote TQM principles within the school.
- The implementation of a multifaceted program of in-school training of teachers, supported mainly by Ministry bodies, the Education coordinators, the Universities, results in the quality upgrade of the schools.
- The Implementation of pilot programs applied in the experimental schools, introduce innovative teaching practices in education, contributing to the upgrade of the quality of the produced educational work of the schools.
- The participation and distinctions of the students of the experimental schools in student competitions (mathematics, natural sciences, visual arts, social and cultural activities), proves the quality of the provided education.

- The operation of the Educational Clubs gives way to the creative concerns and the special inclinations of the students and cultivates a wide range of interests, promoting the collective work.
- The school community operates satisfactorily within a framework of cooperation, mutual understanding and trust. The large and active participation of parents in pedagogical - informational meetings, as well as the various activities of the school confirms the above picture.
- The operation of the afternoon experiential groups of parents in some schools of the sample help significantly in the formation of a healthy and creative parental involvement in the school unit, a constant demand for the comprehensive development of the students.

The views of the principals and teachers of the experimental schools were also researched regarding the role of the Directorate in the effective operation of the educational work of the school organization and in relation to the indicators that ensure its quality.

In particular was investigated, the role of the principal in relation to the formation of school culture, the quality of communication between members of the school community, the continuous improvement of teachers' professional development, the introduction and implementation of innovations in the school unit, the use of modern technologies the science of Informatics, the development of the social role of the school, the evaluation of the school unit, the management of financial resources for the benefit of the school and the management of the pandemic.

The research revealed the following regarding the role of the Principals of the Experimental schools in the quality upgrade of the school:

- Principals have enhanced academic qualifications and teaching experience which enables them to effectively convey the school's mission to the school community
- They have a vision that they share with the educational community and motivate it to realize it.
- They are fully aware of their role and seek with their attitude and values to create a climate of cooperation and trust between members of the school community, shaping the school culture.
- Have open communication with all involved in the educational community.
- There is cooperation of the principals with the teachers and the students of the school for the organization of the school life in an atmosphere of understanding, respect and trust.
- There is regular and constant communication with parents on issues of student progress and behavior
- Defend the choices of teachers
- They are active listeners in the issues of the students' parents, and their aim is to create a climate of trust.
- In conflict management they are fair and impartial in order to prevent outbursts and controversies.

Our research supports findings related to the literature review, e.g., that the principal has a key role in the effective operation of the school.

According to the literature, the school principal should have a high level of education, but also have the will, determination and fist to promote the principles of TQM within the school. Therefore, his duties include ensuring the participation of staff in training programs, striving to optimize performance, constantly encouraging and motivating staff to work tirelessly to achieve common goals.

Maintaining a balanced relationship between the team and the wider local community, the smooth running of the school, the ability to take into account all possible obstacles in order to formulate the appropriate strategies to be adopted in order to optimize the most efficient operation of the unit (Prueangpichayathon et al., 2015).

Also, the Director has a large share of responsibility not only for the smooth operation of the unit, but also for the formation of the appropriate climate within it, in order to favor solidarity and cooperation in the joint effort with the ultimate goal of continuous quality improvement inside of the unit and its most efficient operation (Meehan, 2003).

The specific philosophy in essence puts the respective school unit in a continuous process in the framework of which decisions are implemented that result in radical cuts in all levels of the structure and operation of the unit (Athanasoula-Reppa, 2008).

Moreover, according to Deming (1982), in order to be effective, a leadership must control the productivity and efficiency of employees in the performance of their duties and unite them all around the effort to achieve some common goals.

Suggestions

Concluding the research, we submit proposals with the aim of further improving the operation of the experimental schools. The following proposals are based on the philosophy of the TQM and aim at further quality and effective upgrading of schools.

- Central planning for Education by a Single Party Committee
- Curriculum with the possibility to add goals from the school, depending on the local needs that are formed in each school.
- Financial support of the school for building infrastructure.
- Training of members of the school community on issues of administration and implementation of TQM principles.
- Preparation of a Report by the school community that will include swot analysis, so that the educational community can identify its strengths and weaknesses.
- Statistical recording of school operations by a designated team that will be responsible for school quality and action planning to improve operations where required.
- Creating teams with distribution of responsibilities according to the specialty, skills, and interests of teachers.
- Frequent meetings between team members in order to control their actions and where they need to improve.
- Providing secretarial support to the director in order to be able to carry out his teaching, pedagogical and administrative work.
- Reinforcement of the Compensatory / Reinforcement Education with the creation of Integration Departments, where it is required for the treatment of students with learning difficulties.
- Staffing of schools with the specialty of Psychologist on a daily basis to address students' behavioral problems and the mental empowerment of the school community.
- Training programs for parents in order to improve relations with the school and their further participation in school activities through a regulatory framework.
- Development of collaborations between schools and institutions of higher education, focused on research, and feedback between theory and practice.
- Encourage and support school teachers to participate in school networks in order to share experiences and educational materials, to disseminate innovation and to support the further development of schools.
- Schools design the entire school career development program for collaborative learning through digital platforms, accessible, and from other schools.

In a modern and competitive environment, the 21st century school is called upon to meet the challenges of the time. The implementation of a modern model of administration in schools such as the TQM enables to inspire a new breath in education, improving the quality of education, the effectiveness of the work of school organizations and preparing citizens who will be active, critical and prepared to join the labor market.

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EDUCATION PRACTICES

ENVIRONMENTAL EDUCATION AND UTILIZATION OF NATURAL AND RECYCLABLE MATERIALS IN EARLY CHILDHOOD

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ABSTRACT

Environmental Education (EE) is perceived as an active method that brings about changes in educational systems and the role of school in society. Preschool is considered the basis for acquiring environmental awareness in preschool age and thus it is crucial to exert efforts to form environmental consciousness in childhood. The importance of EE is major as it contributes to the acquisition of knowledge, attitudes, and skills, while activating children's emotions, enhancing their participation in daily activities and helping them adopt a responsible environmental behavior. The aim of this study was to investigate the behaviors and attitudes of children in early childhood towards environmental education as well as to examine the use of natural and recyclable materials in early childhood as a tool of environmental awareness.

Key Words: Environmental education, environmental awareness, sustainability, early childhood.

INTRODUCTION

The environment holds vital importance both for humans and all living organisms. The overexploitation of the environment, which aimed primarily at industrial development, has led to a series of environmental problems. The need to redefine the relationship between humans and the environment resulted in the establishment of Environmental Education which serves as a means to act in order to address environmental problems. Environmental Education has a significant impact on preschool age because it affects the shaping of children's environmental perceptions and behaviors. At the same time, Environmental Education aims at the adoption of environmentally friendly behaviors as well as at raising awareness about the environment (Bradley *et al.*, 1999).

Given the significance of early childhood in setting a foundation for environmental awareness, interest, and behavior later in life, early childhood environmental education (ECEE) is envisioned as a unique type of Environmental Education, thereby affecting the emergence of various approaches and philosophical orientations (Ernst and Burcak, 2019). Through developing attitudes, values, knowledge, dispositions, and skills to undertake pro-environmental actions, environmental education fosters engagement in enhancing the sustainability of human-nature interactions over time (Mastrángelo *et al.*, 2019). Environmental education is relevant throughout the cycle of life, from infancy to senior citizenship, in formal and non-formal avenues (Leal Filho *et al.*, 2018)

It is often assumed that preschool children are too young to engage in environmental education and understand environmental problems. They are, however, old enough to appreciate the beauty of nature

and start acquiring pro-environmental attitudes (Spodek *et al.*, 1991; Bozdemir *et al.*, 2014). Many researchers claim that environmental education should begin in preschool as this period is suitable for raising children's awareness about environmental issues. This awareness is achieved gradually as children shape positive environmental attitudes, values, behaviors. The earlier children are taught environmental values, the more effective these values will be (Cini *et al.*, 2012; Caduto, 1985). This is confirmed also by other researchers such as Hendee *et al.*, (in Newhouse, 1990) who consider that values concerning the environment begin to shape early and are stabilized in the course of time. The fundamental requirement for the development of moral habits is the support of adults in the environment of children such as parents, educators and so forth (Wilson, 1993). In the context of the educational process, activities, which are suitable for promoting knowledge on environmental topics, should be promoted. In this way, the acquisition of environmental knowledge can lead to environmental awareness which can, in turn, lead to active action (Cini *et al.*, 2012).

Environmental awareness, however, is considered effective when it drives children to shape environmental consciousness (Wilson, 1996). Environmental consciousness, a difficult notion for young children, is initially formed through the acquisition of knowledge about environmental issues and environmental notions. The acquisition of knowledge can thus enable children to comprehend environmental issues and notions. The second stage involves the cultivation of positive environmental attitudes and values which is achieved through the cultivation of pro-environmental emotions within young children. Finally, the third stage, which is resulting from the two previous stages, leads the child to shape environmental consciousness. In other words, the child that reaches the third stage can -due to the acquired knowledge, attitudes and values- proceed to choices and actions that protect the environment. Having acquired the third stage it means that the child has environmental awareness and has started to acquire environmental consciousness (Evans *et al.*, 2007; Ors, 2012).

It is worthwhile to note that environmental action, which aims at raising children's environment awareness, should prompt children to engage in environmentally friendly actions such as recycling. Therefore, the actions that concern environmental education in the context of school should succeed in changing children's behavior. The awareness of young children is evident when children on their own initiative engage in actions such as placing recyclable materials in the correct bins rather than placing them in those for organic waste. Moreover, environmental awareness is evident when children begin to use natural resources, such as water, in a careful manner and even make suggestions to their close people like their parents. Through these simple actions, children show their concern about environmental issues such as waste management and environmental pollution. In conclusion, children's awareness about environmental issues in a young age is critically important for their later life in order to address all problems that disrupt the balance of the planet (Mc Farland and Boxall, 2003; Tampakis *et al.*, 2011).

Environmental awareness however is considered successful only when it leads the child to shape environmental consciousness. The environmental actions of children with the use and utilization of natural and recyclable materials can raise their environmental awareness while seeking to change their behavior towards the environment. The latter is achieved both through the acquisition of knowledge about environmental issues as well as through the adoption of attitudes and values that instigate children to engage in environmentally responsible types of behavior and action (Tayci and Uysal, 2012). The use of both natural and recyclable materials in constructions and art creations is very important because it draws on children's imagination, creativity and sensitivity. It is also widely accepted that young children spontaneously integrate useless materials from nature in their games and give them a new life by using them as construction materials or giving them a role to play in their games. In addition, these materials are used in innovative ways which often amaze adults because children have inadequate knowledge about the conventional use of these materials (Epstein and Trimi, 2005). The integration of useless materials from the natural environment in children's games is also a source of inspiration for adopting new roles in their games.

The aim of the present study is to investigate the behaviors and attitudes of preschool children towards environmental education as well as towards the use of natural and recyclable materials as a tool for environmental consciousness. The research questions that will be examined involve:

- To what extent are natural and recyclable materials used in the daily life of children of pre-school age?
- Can the use of natural and recyclable materials promote environmental education?
- In what way can natural and recyclable materials be included in the daily life of children?

- Can children of pre-school age acquire a rounded perception of environmental education so that they develop awareness about environmental problems and adopt an environmentally responsible behavior in their later life?
- Can natural and recyclable materials be used in a way that they consist a tool for environmental education for children?

RESEARCH METHODS

To collect the necessary data for this research, convenience sampling or coincidence sampling was used. The study area was defined as the geographic limits of the Primary Education of Eastern Thessaloniki. The data were collected through a sample of 31 subjects with the use of a structured questionnaire which involved 20 closed-ended items. The sample involved preschool educators. Moreover, the questionnaire consisted of items that were designed to collect respondents' demographic characteristics such as gender, age, family status and so on. The questionnaire involved both open-ended and closed-ended items in which respondents chose their response from a set of responses on a grading scale. The statistical analyses were conducted with the Statistical Package for the Social Sciences (SPSS) version 20.00, that contained the installation of the sub-system Exact Tests. It should be noted that this study consists the pilot test prior to a broader research on a larger sample (Dafermos, 2005).

RESULTS

All respondents in this study were female and most of them (by 45.2%) were aged between 30-40 years while the majority was unmarried (by 64.5%). In addition, the strong majority (87.1%) held a Bachelor's degree and only a small percentage of respondents (12.9%) held a Master's degree. In addition, 9.7% of participants stated that they had completed further education studies. Most respondents were nursery teachers (71%) while 19.4% were preschool teachers (Table 1).

Table 1.
Sociodemographic characteristics of respondents

Age	Frequency	Percentage%
23-29	10	32.3%
30-40	14	45.2%
41-50	6	19.4%
Over 50	1	3.2%
Family status		
Unmarried	20	64.5%
Married	11	35.5
Education level		
Bachelor's degree	27	87.1%
Master's degree	4	12.9%
Professional capacity		
Nursery teacher	22	71.0%
Preschool teacher	6	19.4%
Other	3	9.7%

The highest percentage of respondents (by 51.6%) stated that they have not participated in a program of environmental education in their life so far while the remaining share of respondents (by 48.4%) stated that they have participated in a program of environmental education. Despite the fact that most respondents stated not having participated in such programs, it can be seen that the difference between those who have and those who have not participated is not significant. In terms of respondents' environmental awareness, more than half respondents (54.8%) appeared to have awareness in contrast to a lower share of respondents (45.2%) who had less awareness about the environment. Therefore, these two shares show that all respondents have awareness, yet to different extents.

Respondents were asked about the reasons that account for environmental problems. As Table 2 shows, the overwhelming majority (90.4%) perceived that the main reason was citizens' lack of environmental awareness followed by the lack of educational programs at schools (71%), the lack of state stakeholders' initiatives (61.3%) and industries' improper operation and violations (48.4%). Moreover, a lower share of respondents (6.5%) viewed that there are other reasons underlying environmental problems.

Table 2.
Classification of reasons for environmental problems

	Percentage %
Lack of citizen environmental awareness	90.3%
Lack of educational programs at schools	71.0%
State stakeholders' lack of initiatives	61.3%
Industries' improper operation and violations	48.4%
Other	6.5%

It can thus be seen that citizens' lack of environmental awareness is a major factor which accounts for environmental problems according to the participants of this study.

The highest percentage of the sample (77.4%) perceived that it is necessary to include environmental education in preschools as in this way children can shape pro-environmental attitudes early which can in turn result in environmentally responsible citizens who will think and act in view of the general interest. Based on the above, it can be understood that educators hope that environmental education will be integrated into preschool. Moreover, the overwhelming majority of respondents (96.8%) stated that the application of environmental education programs on preschool children is very important whereas only as few as 3.2% of respondents regarded it as moderately important. According to educators, the application of environmental programs on preschool children is overall viewed as highly important. In addition, all respondents were positive to the ability of environmental education in preschool age to shape environmentally aware citizens. At this point, the environmental awareness of educators can be seen which is highly important for their ability to disseminate knowledge and attitudes to children.

Regarding the use of natural and recyclable materials in children's constructions, the majority of educators (90.3%) stated that children use such materials often or very often or always. Only a minor share of respondents gave a negative response to this item. These responses indicate that most educators use natural and recyclable materials during activities in preschool.

Respondents evaluated the initiative of preschool children to choose materials from nature in order to include them in their games. A high share of respondents (61.3%) stated that children choose such materials whereas a low share of respondents (9.7%) stated that children do not do so. The comparison between these positive and negative responses allows us to infer that, according to educators, young children on their own initiative include natural materials in their games.

According to Table 3, the natural materials mostly used in children's activities involve leaves (87.1%) followed by shells and pebbles (74.2%) and twigs (54.8%). Other natural materials that are used but to a lower extent include sand (38.7%), dried tree nuts (35.5%) and soil (32.3%). Moreover, 6.5% of respondents stated that children use other materials than the above. Hence, the utilization of natural materials dominates the preferences of preschool children.

Table 3.

Classification of natural materials used in activities based on the frequency in which they are used

	Percentage%
Leaves	87.1%
Shells	74.2%
Pebbles	74.2%
Twigs	54.8%
Sand	38.7%
Dried tree nuts	35.5%
Soil	32.3%
Other	6.5%

Recycling in the daily life of educators was also examined. The strong majority (93.5%) stated that they engage in recycling whereas only a small share of respondents (6.5%) did not do so. It can thus be seen that recycling consists a part of the daily life of many educators which reflects their awareness about environmental problems.

In terms of materials, educators mostly recycle paper, glass, aluminium and plastic (41.9%). Batteries are also recycled by a lower yet significant share of respondents (32.3%) whereas appliances and electronic devices are recycled by an even lower share (25.8%). In conclusion, it may be argued that all respondents recycle materials which they use regularly in their daily life. In essence, the shorter the life span of a material, the higher the frequency with which it is recycled.

Table 4.
Materials recycled in a higher frequency by respondents

	Percentage%
Paper	41.9%
Glass	41.9%
Aluminium	41.9%
Plastic	41.9%
Batteries	32.3%
Appliance and electronic devices	25.8%

Educators' opinion on whether preschool children can understand the importance of recycling in daily life was also examined. According to most educators (77.4%), children are able to understand the significance of recycling to a great extent while 22.6% of respondents perceived that children can understand it to a moderate extent.

The application of recycling has a positive effect on children of early childhood and helps them not only acquire knowledge but also shape environmentally friendly behaviors in the future. Most educators' responses (74.2%) indicated that children acquire knowledge by exploring and using natural and recyclable materials. Moreover, a relatively lower share of respondents (25.8%) claimed that children do not receive sufficient cognitive support. However, it can be seen that the exploration and use of natural and recyclable materials is a major factor that contributes to the acquisition of valuable knowledge.

Respondents' opinion on the contribution of natural and recyclable materials to shaping responsible environmental behavior was also investigated. It was found that 67.1% of educators perceived that using such materials can make a positive contribution whereas 32.3% perceived that it can make only a moderate contribution. Therefore, the use of natural and recyclable materials in children's games can make a significant contribution to shaping children's environmentally responsible behavior. Educators' willingness to make changes in their daily life in order to protect the environment was next examined. It was indicated that the majority of respondents (87.1%) would be willing to make such changes while 12.9% of respondents were not willing to change their habits. Therefore, most educators expressed their willingness to change their daily life by adopting habits that are friendly towards the environment.

CONCLUSIONS

The findings of this study showed clearly that the use of natural and recyclable materials in early childhood can lead children to an effortless kind of environmental education which aims at both raising their awareness about environmental problems and adopting environmentally friendly behaviors. In addition, educators' responses indicated that it is very important and necessary for children of early childhood to attend environmental education programs. What is critically important is that all educators agreed that environmental education in early childhood can lead to future citizens who will have awareness about environmental issues. The findings also showed that children use natural and recyclable materials very often not only in their constructions but also in their activities at preschool. It should be clarified however that the inclusion of these materials in children's game is not only encouraged by teachers but children themselves also include them. It can be concluded that the findings of this study are promising as most educators encourage the application of recycling due to its ability to provide children with knowledge.

Study limitations-Recommendations

The limitations of this study have to be stated. In specific, the online questionnaire administration resulted in a lower response rate compared to other administration methods while the whole process was time consuming. In addition, the choice of online questionnaire administration for data collection may run the risk of insincere or inaccurate responses.

In order thus to ensure reliable generalizations, it is highly recommended to conduct the survey on a larger sample that will consist of subjects living in different parts of Greece. In addition, a similar study could be conducted with the use of different research instrument such as semi-structured interviews in order to enable participants to express their views and justify them.

In conclusion, the same study could be conducted both in private and municipal nursery schools in order to examine educators' knowledge and compare their opinions.

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HISTORY, PHILOSOPHY AND TEACHING OF NATURAL SCIENCES. PERCEPTIONS OF TEACHERS OF SECONDARY EDUCATION

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ABSTRACT

Because the characteristics of teaching are related to the content knowledge, to the teaching practices, to help students develop scientific ideas and ways of knowing, to discover the culture of science, an important educational challenge is the teaching of science related to the history and philosophy of science. In order to demonstrate its contribution to the teaching of natural sciences as a factor of effective and innovative learning, the views of Secondary education teachers were explored. In particular, the aim was to clarify the reasons why it is important to introduce it in the context of science teaching, the obstacles, and therefore the improvements that need to be made.

Key Words: sciences, teaching, history, and philosophy of science.

INTRODUCTION

Science includes laws, theories, facts, concepts, definitions, set of methods and processes, with observations and assessments, the way we know and explain the world around us, provides supplies, discoveries, solutions (Bell, 2009). It is not just a process of producing scientific knowledge, it is the way we know, it is human effort and communication. It contains the invention of explanations, but also influences the various elements and spheres of the culture in which it is integrated (Lederman et al, 2013). The goal of scientific education is the development of scientific literacy and knowing the structure of knowledge and beliefs is less likely to be taught in the classroom as rhetoric of conclusions (Cobern, 2000). Knowledge of science itself is considered a culture, it is presented as a cultural structure in the process of teaching science (Galili, 2012; Allchin, 2013), knowledge of the function of science itself is needed (Collins et al, 2001), understanding mode of operation includes knowledge of scientific concepts and principles and knowledge of scientific content (Duit & Treagust, 2003). A key to understanding science itself is education (Bartholomew et al, 2004) and the need for teaching to broaden the epistemological question of how we know (Monk & Osborne, 1997). The approach of teaching and learning with history and philosophy of science reveals the non-linear process by which scientific knowledge was achieved, the framework for the discovery of scientific ideas, the social and human side of science (Galili, 2015). Teaching based on the history and philosophy of science has value for science as a process, as obtaining an essential image of science (Gauld, 1991; Matthews, 1994) is the way to upgrade the cultural component of scientific knowledge (Kolliopoulos, 2009), a different perspective on Science and Education is possible (Skordoulis, 2009) and if the history of science can contribute to these goals, then what, how much and why history of science is it needed and should be taught? (Russell, 1981). In order to demonstrate the contribution of history and philosophy of science to the teaching of science as a factor of effective and innovative learning, the views of secondary school teachers on the contribution of the history and philosophy of science to the teaching of science were explored. In particular, the aim was to clarify the reasons why knowledge of the natural sciences is important, because the introduction of history and philosophy of sciences contributes to the teaching of the natural sciences, promotes scientific education and therefore improvements, steps that need to be taken to introduce history and philosophy to the teaching of science.

SUMMARY

Teaching of natural sciences is the field of research of didactics, which is developed through the interaction of innovations in teaching, theories, natural sciences, epistemology, paedagogy, history and philosophy of science, aiming to improve the quality of education. Because the characteristics of a teaching are related to the content knowledge, to the teaching practices, to help students develop

scientific ideas and ways of knowing, to discover the culture of science, an important educational challenge is teaching that introduces students to its culture. to learn what it means to participate in scientific research, to the tools of observation and measurement, to the standards of evidence, and to the values and beliefs on which the production of scientific knowledge is based and how it evolves. This learning can be achieved in the context of teaching of natural sciences related to the history and philosophy of science, teaching about how the natural sciences influence the evolution of ideas but also the evolution of perceptions in science itself, teaching the contribution of learning about what natural sciences are, how they evolved, to enhance learning and to highlight the human face of science.

HISTORY, PHILOSOPHY AND TEACHING OF NATURAL SCIENCES

If learning is the change in knowledge, the reinforcement for the change of behavior, the empowerment of the behavior and the goals of learning are related to the student, the behavior expected from the student, if he has learned, with the goal of the lesson, the teaching provided to them takes into account the cognitive learning field, the emotional field and the psycho-emotional field (Norris & Phillips, 2003) and learning means learning in ways that will translate what we have learned more widely into new situations and therefore continue to be useful both in meeting life challenges and in further learning, the context of how we learn something is just as important as what we learn (Langer, 2000). Education is a continuous process of connecting with research (Gilbert et al, 2006). Through research, students ask questions and reflect, critically explore, as they collaborate with their peers and with the help of technology, digital media, learn, build new knowledge by applying scientific principles (Chappell et al, 2015).

The teaching of natural sciences, as a paedagogical science, is related to a wide range of fields of scientific knowledge and the student's understanding of the evolution of scientific knowledge is its goal. It is therefore also related to the history and philosophy of science (Matthews, 1994). An important parameter of the curricula, the first step for effective teaching is the selection of the content, the clear planning of what should be taught, the teaching methods, the teaching strategies, that is, the school knowledge, with the organization of the content as the main element of students' ideas about the natural world. If the social and cultural context is not taken into account then the axes of content are science, technology, society (Driver et al, 2000).

Learning of natural sciences is structured by the teacher, teaching with knowledge for the conversion of the content of the topics into forms more understandable for the students, the teacher correlates his paedagogical knowledge with his knowledge in the school context, for the teaching of specific students (Shulman , 1987). The teacher interprets the topic, finds many ways to represent the information as proportions, metaphors, examples, problems, demonstrations, activities, adapts the material to the students' abilities, to the previous knowledge and misunderstandings, in forms that are more comprehensible to them. The teacher creates learning environments in which students can understand the concepts and processes of science, has knowledge of students' difficulties and their previous perceptions, prior knowledge and students' misunderstandings about science. Students are involved in learning in a way that they can understand the subject, through reorganization, through activities, exercises, examples and experiments (Cochran et al, 1993). Achieving a good understanding of these aspects requires, among other things, the use of the history of science (Leite, 2002), because there is evidence that philosophy, history, sociology and the psychology of science describe how science works (McComas & Olson, 1998) and the inclusion of history and philosophy of science in the teaching of natural sciences has to do with the usefulness of the history of science associated with better learning of science concepts, increased interest and motivation, introduction to the philosophy of science , better attitude of the public towards science, understanding of the social importance of science (Solomon et al, 1992), with science, with knowledge of the history of science itself, in other words, the history of science is a tool for good science teaching (Rutherford, 2001), is a way of bridging the gap between school science and scientists (Stinner et al, 2003) and teaching good aspects of ideas about science, teaching is explicitly possible and desirable (Osborne et al, 2003).

The way sciences interact in social factors, the characteristics of the functioning of the natural sciences, the assessment and understanding of the creation and validation of knowledge, are described as the nature of science and the development of students' informed perceptions of the nature of science and learning environments exploring authentic scientific practice, is a structure of strong learning environments, target for significant reform efforts in science education around the world (Abd-El-Khalick, 2013). Learning, as an interpretation of information, can humanize the scientific process and

address common misconceptions of students (Clough, 2009; Matthews, 1994; Rudge, & Howe, 2009), highlight the nature of scientific knowledge, cultivate attitudes for learning, how to manage scientific knowledge to contribute to the formation of the modern active and democratic citizen and the teaching of natural sciences with history and philosophy of science supports learning about the nature of science, helps to understand the nature of science and to learn nature of science (Abd-El-Khalick & Lederman, 2000; Irwin, 2000; Niaz, 2009; Rudge & Howe, 2009).

RESEARCH DESIGN - SAMPLE - RESEARCH METHODOLOGY BODY - DATA ANALYSIS

The sample consists of (N = 70) science teachers of the Secondary Education of the region of Epirus, the participants were selected using convenient sampling and the questionnaire consists of closed and open type questions. A questionnaire was used (May 2020) which was made especially for this purpose. Teachers are marked with the letter “E” from now on.

The analysis of teachers' answers on the effect of the introduction of the history and philosophy of science on education for the science teacher, showed that they largely agree with the introduction of the history and philosophy of science in the teaching of physics. influences, improves the educational practices of the teacher (MT = 3.41, TA = 0.67), contributes to the understanding of the content (MT = 3.31, TA = 0.65), contributes to the positive image of science (MT = 3.31, TA = 0.73) and helps to solve theoretical and didactic teaching methods, is a teaching strategy (MT = 3.31, TA = 0.71). In addition, the answers of the teachers showed that they largely agree with the fact that the introduction of the history and philosophy of science in the teaching of natural sciences contributes to the understanding of the nature of science (MT = 3.27, TA = 0.7), contributes to the fulfillment teaching objectives (MT = 3.26, TA = 0.7), contributes to the understanding of the social importance of science (MT = 3.23, TA = 0.71) and contributes to the assessment of students' difficulties, to conceptual understanding (MT = 3.16, TA = 0.69).

The majority of teachers recognize that it is an important introduction of the history and philosophy of science in the context of teaching science because through the introduction of the history and philosophy of science is ensured *the "study of scientific change and interpretation of scientific theory"* (E32), it is necessary *"to introduce it to the logic of scientific discovery, in concepts such as rationality, scientific development and progress and scientific truth"* (E56), *"helps the student to place the production of scientific knowledge in time and geography and to link it to social and political conditions "*(E1), that in this way *" science lessons can be made more attractive and much more accessible to the student's first contact with them "*(E25), an element which is also pointed out by a another teacher who emphasizes that its introduction can *"increase students' interest in learning" and a "escape from the sterile typology"* (E41). The introduction of teaching creates conditions that limit *"the sterile memorization of mathematical relations of laws" by improving the understanding of phenomena, helps the student to understand how "scientific knowledge evolves and how this knowledge interferes with everyday life and affects the individual, society's culture* (E60). However, *"the curricula imposed on teachers by formal curricula which usually ignore or downplay the role of the History and Philosophy of Natural Sciences in teaching"* (E30) should be removed. as a mandatory reference in conjunction with the respective subjects *"(E42) while another (E48) stated that it is an important introduction to the history and philosophy of science is compatible with school textbooks.* Finally, it should not be overlooked that a portion of teachers are skeptical about whether it is possible to introduce the teaching of history and philosophy, as this requires an increase in hours (E50) while another teacher in a similar direction (E62) notes that high school is not possible due to lack of time. Another parameter that emerges through the answers concerns the role that the teacher is called to play, who *"in order to involve the history and philosophy of science in teaching, must be suspicious of their role in history. You need training to feel confident in using them as teaching tools "* (E59).

Another axis that has emerged from the analysis of the answers given by the teachers is the suggestions regarding how the Lyceum students can acquire a science culture. A general observation that emerged from the analysis is that the teachers in the sample submit a series of suggestions, which indicates that they recognize that it is important for high school students to acquire a science culture. The suggestions on how the Lyceum students can acquire a science culture, submitted by the teachers of the sample, focus and highlight the need to differentiate the way in which the course is conducted so that it takes on a laboratory character (E5, E26 , E23, E41, E66) while at the same time it is important to make changes

both at the level of school textbooks (E20, E30) and in general in the way in which the teaching of natural sciences is carried out (E20, E25, E48, E62). These changes should include, in the opinion of teachers, visits to places outside the schools (E53, E58, E63, E64), so that students can come into contact with aspects of the history and philosophy of science while a portion of the sample teachers (E42 E48, E49) indicates that the preparation for the national exams does not allow teachers to take the time to highlight to students aspects related to the philosophy and history of science.

Another element that emerged from the analysis concerns the topics in which teachers choose to apply the introduction of the history and philosophy of science in their teaching are: periodic table (E1, E5, E48), Discovery / structure of atom (E1, E5, E48, E56), how scientific knowledge was created (E41), "The Project Physics Course" (E10), radioactivity discovery (Becquerel, Curie) (E16, E31), Atomic model (Rutherford experiment) (E16), Views of Aristotle-Newton (E18), Controversies over the movement of the earth from antiquity to Copernicus, controversies over earthquakes (E23), Case of Galileo for the pendulum, case of Archimedes for the buoyancy (E31, E62), Theories of evolution, The examples of Mendel and Darwin (E32 E39, E45, E60), History of Quantum Mechanics (E53), "Aristotelian" inductive experiment in contrast to the experiments of Bacon (E65), Earth perimeter measurement experiments (Eratosthenes) (E45), Science biographies / discoveries / historical facts (E66, E70), Chemists awarded the Nobel Prize (E11, E27), Utilizing the textbook inserts Discussion on the occasion of the inserts at the end of each chapter (E20, E25, E40), Structure of matter (E42), Biological evolution (E32), Teaching physics when the textbook of the multidisciplinary was used as a textbook (E30), In the teaching of gases (E59), The effects of electromagnetic induction on electricity generation and the effects on society and the production process (E59), The life of Einstein (E65), Tesla-Edison Controversy, Heisenberg- Oppenheimer (E65), History of the discovery of the structure of DNA, philosophical and ethical issues of intervention in it (E60), Structure of benzene (E48), Air pollution (E48), Reference to social, political and economic conditions (E49), Alchemists E65.

DISCUSSION

The research highlights the historical and philosophical approach to teaching science, the contribution of history and philosophy of science to the teaching of science. Contribution of the history and philosophy of science to the teaching of natural sciences for scientific education, the development of curricula, the production of teaching materials, the writing of books, the conduct of scientific learning research, the strengthening of courses and classroom activities, the preparation of teachers or and the definition of scientific education. The analysis of the teachers' answers showed that they largely agree with the fact that the introduction of the history and philosophy of science in the teaching of natural sciences for the teacher itself affects, improves the educational practices of the teacher, contributes to the understanding of the content, contributes to the positive image of science, in the solution of theoretical and didactic teaching methods, it is a teaching strategy. Teachers largely agree with the fact that it contributes to the understanding of the nature of science, to the fulfillment of teaching objectives, to the understanding of the social importance of science, to the assessment of students' difficulties, to the conceptual understanding. They recognize that it contributes to intercultural teaching and that it ensures an appreciation of the complexity of the relationships between science, society, the environment, and technology. Teachers recognize that it is an important introduction to the history and philosophy of science in the teaching of science as it helps to ensure the interpretation of scientific theory, allows students to better understand the concepts of science, therefore the inclusion of history and Philosophy of science in the teaching of natural sciences is a factor in promoting scientific education. Educational innovation can only succeed if it also includes professional development and empowerment of teachers. Empowerment so that the teacher creates a framework, practices, educational approaches so that students can identify problems, plan research, practice, predict. Teachers form the view that the development and application of new approaches, the need for a more complex pedagogical knowledge requires time but the interconnection of research with practice, conceptual approaches, are important parameters for teaching the implementation of an innovation. such as history and philosophy in teaching. The topics that teachers choose to apply in the introduction of the history and philosophy of science in their teaching, the samples of teaching intervention with history and philosophy, are related to the periodic table, the discovery and structure of the individual, the discovery of radioactivity in atomic model (Rutherford experiment), Aristotle-Newton views, the motion of the earth, for Galileo and the pendulum, the theory of evolution, the examples of Mendel and Darwin, the structure of DNA, the history of quantum mechanics, the experiment of measuring perimeter by Eratosthenes, science biographies and discoveries and the relevant literature highlight

teaching suggestions, specific activities in the history of science and technology are suggested. These are topics that can be taught in a historical and philosophical context, laboratory practices, modern supervisory tools, whenever possible, but most importantly, the inclusion of the history and philosophy of science in national school curricula (Matthews, 1992).), the value of the historical approach to material design is multifaceted (Matthews 1994), aiming to integrate them into the curriculum, in order to contribute to the direct learning of science by students (Monk, & Osborne, 1997). It is not easy to formulate these teaching proposals and students will have to go through the basic processes in order to be able to construct their own knowledge, to understand their own views (Bartholomew et al, 2004), exposure to scientific history can help students understand their scientific claims and rebuild scientific ideas (Galili & Hazan 2001). Consideration should be given to how teachers can support them, relate innovation designed to their day-to-day practices (Clough 2006). Topics such as excerpts from history and the social context (Solomon et al, 1992), authentic problems and questions, from the historical evolution of chemical equilibrium in which students recognize the importance of these problems and questions and can find explanations (Van Driel et al, 1998), a case study in the field of electromagnetism, teaching the history and philosophy of pendulum motion (Matthews, 2000), the contribution of models to the development of chemical knowledge. following leading scientists such as Kekulé, Van 't Hoff, Pauling, Watson and Crick (Francoeur, 2000), a teaching strategy based on the history and philosophy of science for conserving mass in chemical reactions (PAIXÃO & Cachapuz, 2000), the historical approach to proper teaching and learning of chemical equilibrium (Quílez, 2009). Development of the periodic table (Weisberg et al, 2011) as a historical development, teaching enhancing students' appreciation of alternative forms of perception of progress in science (Brito et al, 2005). Lessons with a variety of teaching and learning strategies with historical scientific facts about the fall of bodies so that teachers can develop their own educational material in which the history of science is appropriately used as a method of teaching science (Kokkotas et al, 2009), the invention of Volta battery in 1800 (Fauque, 2009). The case of the teaching of quantum mechanics and quantum chemistry, with reconstruction of historical episodes (Garritz, 2013) the inclusion of philosophical interpretations in quantum theory (Greca & Freire, 2014), in non-formal and informal education an interactive narrative inspired by the Galileo Dialogue (Panagopoulou, et al, 2019). If education is oriented towards educating and creating citizens who think critically, with a cognitive background, creatively, then the approach through teaching with history and philosophy of science is a desirable strategy. Thus, the application through the history and philosophy of science is connected with the didactic practice, with the innovation of the curricula, with the development of the awareness and understanding of science and the role it plays in life, with the preparation of the next generation of scientists, combines learning about what the natural sciences are with the evolution of these sciences.

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DISTANCE-EDUCATION PRACTICES

ACTION RESEARCH AS AN INNOVATIVE PRACTICE IN PRESCHOOL EDUCATION

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ABSTRACT

In recent years there has been a growing interest for combining teaching and research in the field of education. Therefore, this work studies and investigates, Action Research as an innovative teaching philosophy and practice as it has emerged through scenarios of its application in a Greek Kindergarten. The teacher with co-researchers the students themselves, the parents and the "critical friend" of the Action Research cultivates collaborative-exploratory learning in a climate of reflection and trust and acquires mind and soft skills for a lifetime through a qualitative research in a Kindergarten class.

Key Words: Action Research, innovative practice, school members-co-researchers, reflection, collaborative-discovery learning.

INTRODUCTION

Nowadays in the “society of knowledge” our educational needs change all the time. Today’s students and skillful citizens to be are called upon to search, to estimate factors, to form strategies and finally to make right decisions. However, nowadays schools are characterized by lack of motives for research (Carr & Kemmis, 2005) and initiative to think critically and act innovatively (Parker, 1997:15). Therefore, education turns out to be a mechanism of stereotype behaviors (Konstandinou, 2015).

On the other hand, Action Research appears to be an innovative, useful teaching theory and practice to organize a class, suggesting that teachers and pupils should upgrade their roles by becoming “researching-active people” (Makrinioti, 2000) in order to participate equally in the educational - learning process having a vision in common as far as the evaluation and the improvement of their school routine are concerned (McNiff, 1995).

Theoretical framework

The Action Research as Educational innovation

Action Research (A.R.) is an alternative way of investigation which helps to comprehend the reality (educational and others) in order to spot problematic conditions and predict obstacles and problems likely to arise so as to search for their successful solutions. As for the educational field, A.R. enables the members of a school community to investigate their practice and routine aiming to check whether these are as they wish and therefore improve them (Mc Niff, 1995).

So, each application plan of A.R. in a school class recommends educational innovation since it assures and develops the dynamic participation of every stakeholder and motivates him to take part in a research. This research emerges from the stakeholders’ real needs and focuses on their meeting (Posch, 2003). Thus, A.R.:

- ✓ improves teaching practices by making students more active as co-researchers in the learning process
- ✓ motivates teachers to reflect educational beliefs and methods and be developed professionally
- ✓ creates a nice, calm class - atmosphere in which investigation in depth takes place
- ✓ provokes students and teachers to collaborate and search for useful information
- ✓ forms a democratic, up to date school community which develops lifelong skills

Terms and definitions

Numerous terms and definitions refer to Action Research. According to Katsarou (2016), it is an active, participatory research and as Reason & Bradbury say (2001:1): “it involves systematic development of practical knowledge, it combines action with reflection and theory with action and it leads to solutions for the people and their societies”.

Action Research models

Various models exist. However, what they all share is that A.R. is a non-stopping process of interconnected phases-circles which are connected all together spirally focusing on a problem aiming to constant, small improvements of problematic conditions (Hoogenraad, 2020) through reflection and formative evaluation.

Characteristics of Educational Action Research

One of the main characteristics that A.R. has is that it recommends collection of data-information from various sources. Consequently, researchers (at the educational A.R.: teachers and students as co-researchers) adapt to different conditions easily and are led to suitable actions which produce useful, experiential knowledge via dynamic interaction (Edwards, 2005).

Furthermore, A.R. combines theory with practice with the purpose of positive, social change (Katsarou, 2016). Moreover, it inspires school members to cooperate, develop mind and soft skills and visualize an upgraded role in an upgraded school.

What makes that even greater is the bottom-up character of A.R. as students together with their teachers discover a problem in their school routine and collaboratively form strategic plans to solve it (Kemmis & McTaggard, 1998:21-28). Last but not least, this is achieved by rethinking espoused theories, as Argyris & Schon (1974) call them, by enriching ideas and by transforming old fashioned ones into modern and appropriate for the future ones.

Phases of Action Research

A.R. associates theory with practice and research with action so as to obtain useful and qualitative knowledge. According to Avgitidou (2015: 11) this happens in phases:

1. 1st phase: DISCOVERY OF “PROBLEM” / SPOT THE NEED

- Class research and needs - recording
- Discovery of “problem” through qualitative and quantitative research tools
- Analysis of gathered data

2. 2nd phase: PLAN OF ACTION / FORMATIVE EVALUATION

- Utilization of collected data for planning action
- Application of A.R. plan(s) in class
- Formative evaluation of plan(s)

3. 3rd phase: FINAL EVALUATION OF A.R. PLAN

- Final evaluation of plan(s)
- Reflection of practices and deductions
- In the long run, A.R. arises to be not only an educational theory and practice but an innovative process of knowledge production too.

Qualitative characteristics of A.R.

At educational A.R. the teacher-researcher is an integral part of the reality he investigates and therefore he attempts to understand and interpret behaviors in their natural environment (in the school class) by studying the meanings that the other participators give to the research (Denzin & Lincoln, 2000). Consequently, the teacher-researcher seeks to search in depth a cause (problematic condition) and its result(s) (ideas, behaviors, relationships, culture) in a field action (classroom) via an A.R. plan.

The research tools that the teacher-researcher and students-co researchers can use are numerous, both qualitative and quantitative:

- Observation
- Discussions
- Interviews
- Questionnaire
- Teacher’s diary
- Sociogram

- Children's drawing

On top of all these, the “critical friend” of A.R. arises. This is a person-cooperator in the research who is an expert at A.R. theory and practice. He / she can facilitate the teacher-researcher and can consult him as a Mentor inspiring him to self-reflection and to right, thoughtful actions (Sagor, 2005).

Quality criteria of A.R.

Educational A.R. has quality because its philosophical theory is qualitative as well. It aims for knowledge that derives from the “bottom cell” of a school: the students in a class and their needs. All in all, this constructive and experiential knowledge can affect beliefs and social constitutions (Kemmis, 2006: 471).

Moreover, A.R. and its results emerge from democratic procedures characterized by high values. All school members participate equally in the research, collaborate, communicate and share ideas equally in order to reach the best decision (Winter, 2002).

Specifically in the educational field, A.R. sets as a goal to map and reveal ways of improvement for the school routine (Mills, 2011). As a result, working conditions for teachers are enhanced and teaching models are reformed (Hensen, 1996) as the traditional teacher-expert practice is rejected and it is replaced by a modern one which sets students in the centre of the learning process and the teacher as Mentor next to them inspiring them to cultivate skills for a lifetime.

Need for A.R. as an Educational innovation

According to Ball (2007), educational innovation is the removal from traditional, “sterile” educational practices to new, prototype ones as far as their frame, their goals and models of action are concerned.

Thus, A.R. should be regarded as an innovative teaching theory and practice since it embraces: reflection of old fashioned ideas and actions, development of mind and soft skills, creation of new school culture, upgrading of roles, strong bonds among school members (Katsarou & Tsafos, 2003).

All in all, A.R. can appear as essential Educational innovation since it:

- ❖ is a collaborative research (Katsarou & Tsafos, 2003a)
- ❖ produces experiential knowledge and inspires for new, innovative teaching ideas (Carr & Kemmis, 1997)
- ❖ is flexible (Kemmis & McTaggard, 1998)
- ❖ leads to self reflection as far as ideas, values and behaviors are concerned (Kemmis & McTaggard, 1998)
- ❖ inspires teachers to develop professionally (Hollingsworth & Sockett, 1994)
- ❖ has qualitative characteristics (Katsarou & Tsafos, 2003b)
- ❖ changes school culture (Pine, 2009: 121)

METHODOLOGY OF RESEARCH-WORK

Type of research, research purpose, research techniques

The most suitable type of research arises by the research purpose each time (Glesne, 2018). This works as a compass for the researcher. In this particular work, qualitative research was chosen as the researcher studies the bond between a cause (A.R. plan) and a result (solution to a problem in the school routine) in the frame of a field work (class) of a Kindergarten. Moreover, the researcher attempts to interpret the routine of a Kindergarten class in real conditions so as to develop a theory which reveals A.R. as an innovative teaching model for the holistic development of all school stakeholders.

Thus, the research purpose of this work is to pinpoint how the teacher can be transformed into a Mentor for his students and how all the school members experience A.R. and its results as improving changes in their thinking and their behavior by developing useful soft skills for a lifetime.

Research questions

Moreover, the research questions that would fulfill the above goal and “solve the research puzzle” (Creswell, 2010) have been:

1. *What advocates A.R. as an innovative educational practice?*

According to this research question, the researcher investigates a Kindergarten class in order to locate characteristics of A.R. which recommend it as an innovative teaching model leading to improvement of school reality which derives from the school members' reflection and formative behavior (Someck, 1995).

2. Why is it useful to apply A.R. in education and in Kindergarten in particular?

A.R. can motivate teachers to rethink their perceptions and practices of teaching, improve the relationships among the school members and contribute to a holistic change of school culture which is enriched by useful mind strategies, social and soft skills. All the above are valuable in the educational field and in the Kindergarten especially which is the first step of school life for each child.

3. What are the results of A.R. in a Greek Kindergarten?

Through this question, the teaching practice is investigated and ultimately its results in the students' learning. Furthermore, what is searched is the way children of Kindergarten act in order to solve problems in class and consequently how this affects them in their life outside school.

4. Which factors make teachers either to adopt or reject A.R.?

Based on this research question, the researcher tries to search and explain why teachers wish to adopt A.R. as innovative teaching theory and practice and on the other hand why they seem reluctant to embrace it in their class routine by focusing on causes-obstacles that are associated with personality traits, personal restraints, working conditions and Educational Policy in general.

The significance of the research

According to Marshall and Rossmann (2011:71-72), the significance of a research lies to the fact that it would add to the already gathered information for the studied topic and can lead to new, useful knowledge. In the long run, this work would help teachers to reflect their teaching model and meet a new, innovative one, that of A.R. Moreover, this research would help all school stakeholders to improve themselves and their school reality.

Sampling, sample

Easy and convenience sampling was chosen by the researcher because the sample was chosen intentionally dependent on his convenience to have easy access to it (Creswell, 2010). So, 41 children-students of Kindergarten, 41 parents, one Critical friend of A.R. and the researcher were used as sample.

Research tools

Each research tool must respond to the special frame of the research taking place. Thus, in this work the researcher chose as research tools the:

- Systematic observation (of Kindergarten pupils)
- Questionnaire (to parents)
- Classroom conversations
- Interview (to pupils)
- Children's drawing
- Teacher's diary
- Sociogram (in classroom)

The systematic observation was chosen because Kindergarten children often reveal their thoughts and wishes via body language. So, their being observed by the researcher can lead to valuable data about their thinking and actions in the classroom. The researcher taking into account this factor was keeping notes indifferent and various conditions of the class routine, which then was re examining and re evaluating. In that way, an objective and holistic picture of the school reality was being mapped.

As for the questionnaire, it tends to be a quantitative research tool but here it was used so as to elicit useful information from the pupils' parents as far as the children's emotional behavior is concerned outside school.

Moreover, classroom conversations used to be a routine in this particular classroom since the teacher-researcher has acknowledged the great impact that they can have on the learning process (Mercer, 2000). Therefore, the pupils were accustomed to taking part in democratic conversations, exchanging ideas and reinforcing them, being active listeners and all these have given useful information to the researcher.

Furthermore, the interview was chosen as a research tool since it gives the interviewee the opportunity to speak freely and express his/her own beliefs and emotions (Robson, 2007).

In addition to this, children's drawing was used effectively as it motivates Kindergarten pupils to present through their own perspective of life, their world and personality. Especially, the introverted children are helped a lot by the drawing to express their feelings.

Except for the above, the teacher's diary was chosen as a research tool too because it is associated with A.R. and it gives the teacher the spur to write down about his/her own practices (Pine, 2009). Additionally, it reassures that the teacher-researcher is keeping notes by trying to interpret and solve a problem and not only to describe it.

Lastly, the sociogram was used by the researcher as it is a tool for mapping the social relationships amongst the members of a team, revealing them qualitatively and quantitatively (Delikostopoulou & Grapsa, 1998).

The implementation of A.R. in a Greek Kindergarten

The innovative A.R. can help school meet today's needs of modern students. The phases of A.R. which are closely connected to each other suggest a change's taking place. Therefore, the phases of A.R. implementation in a Greek Kindergarten have been:

- Detection of needs, problematic conditions /Collection of data
- Planning of activities / implementation of A.R. plans
- Formative evaluation of A.R. plans
- Reforming of plans / re implementation
- Final evaluation of A.R. plans
- Reflection / deductions
- Through these phases, not only have both teachers' and students' conceptions and behaviors been changed in the particular Kindergarten classroom but innovative teaching practices and utilization of new teaching tools have been arisen too.

Discussion on A.R. results

Montessori, the famous Italian educator, used to say: "*if a child doesn't learn the way we teach him/her, then we should teach him/her the way he/she can learn...*" This is exactly what A.R. serves. It exposes children/pupils to constant processes of self-learning.

The children as co researchers and participants in school routine decisions

Through A.R. the children having the teacher as facilitator of their learning, learn to:

- ✓ Investigate for problems which harden their class routine
- ✓ Set realistic goals
- ✓ Plan and implement action plans
- ✓ Discuss and become active listeners
- ✓ Use arguments and justify their choices via critical thinking
- ✓ Solve problems and fights calmly
- ✓ Create strong friendship bonds
- ✓ Take initiative in a team and learn from errors
- ✓ Develop soft skills

The parents' upgraded role as a source of information

A.R. recommends that all school stakeholders should take part in the research and interact envisioning an enhancing school reality. So, pupils' parents are involved in A.R. plans too. The teacher-researcher collaborates with them, trusts them and seeks for their opinion so as to understand better the children's needs, ideas, behaviors and form suitably the learning process (Caddell, 1996). Thus, the parents become external cooperators and the teachers develop themselves professionally via this cooperation.

The teacher's transformation

The teacher- Action Researcher sets the pupil in the centre of the learning process and school reality (Dewey, 1997). He/she investigates what and how affects the class routine and cooperates in a research to find out ways for dealing effectively with the obstacles arisen. Thus, the educator leads himself to professional development and professional learning as he evaluates his ideas and practices and reforms them (Mezirow, 2007) in order to meet the modern needs.

In the long run, the teacher through A.R. succeeds in:

- ✓ Developing innovative teaching models
- ✓ Collecting useful information and interpreting data
- ✓ Comprehending better his role and that of his students
- ✓ Collaborating and listening actively
- ✓ Becoming a Mentor for his students developing lifelong skills

Deductions

A.R. is combined with the educational action and contributes to its holistic improvement. Every school member of a school community is improved and a bottom-up change takes place. Everything starts from the bottom cell of education: the students and their real needs.

Teachers, children and parents accustom themselves to research through which they reform beliefs and behaviors. Moreover, they expose themselves to constant evaluation and reflection. So, they become active researchers in and outside of the school class.

The children's voice is heard actively in every school issue and the teachers help them discover useful information and build "open" knowledge for the future. Furthermore, they develop mind, social and soft skills, useful ones for the rest of their lives.

Last but not least, a systemic change is taking place in the educational field. A.R. evokes all school stakeholders to embrace diversity of tools and techniques, curiosity for innovation, creativity and self learning for a lifetime. According to A.R. they all "learn how to learn" and educators become facilitators in this learning process. Consequently, A.R. reveals and recommends that:

- research is valuable in education field and in school class making all co researchers (Day, 1991)
- collaborative learning is vital in a pupil-centered school that we all wish to have
- there is need to assign high performance on the basis of educational system: school / teacher/ students in the historical institution of education (Kastoriadis, 2000)
- the reflection, the continuous formative evaluation, the experiential training and "a critical friend" are important to education
- teachers must be Mentors and consultants to their students
- A.R. succeeds in developing the 4Cs (Collaboration, Critical thinking, Communication, Creativity) – valuable skills of 21st century

Further-future suggestions of this research work

The innovation of this work lies to the fact that A.R. hasn't been implemented adequately in the Kindergarten yet. So, both its quantitative and qualitative impact on teachers' conceptions and attitude and on every school member's role haven't been studied in depth so far. As a result, this research work comes to show the extraordinary change to the teacher's, students' and parents' role in school reality through A.R.

On top of that, this work could be used as a compass to Kindergarten teachers who wish to "meet" A.R. and think whether it is profitable for their classes to either adopt it or reject it. If they chose the first option, suggestions of A.R. plans and tools are given to them. If they select the second choice, this work may motivate them to rethink it.

Moreover, this research work could be used as a spur for future researches in the field of educational A.R. Researches that would take place in Kindergarten classes focusing on the great results that A.R. can bring to preschool education, which is the first, valuable step in every child's school life.

Furthermore, this work may be used as basis for future educational courses to be created by experts for teachers who wish to implement A.R. in their classes. Even more, a future suggestion could be to search the reasons why teachers either adopt or reject A.R. as innovative educational theory and practice.

Finally, as A.R. is combined with evaluation from its very beginning to its ending of implementation, it can be associated with every form of evaluation and can be studied in the future how this facilitates evaluation in a school class.

CONCLUSIONS

Today's educational reality and school routine need to assign high performance on the basis of educational system: the pupils and teachers in a school class. Thus, the development of collaborative learning in a student-centered school arises as vital element. Moreover, in today's society filled with information and knowledge, the research is necessary. The research done by teachers in the role of Mentors, by children as Mentees /co-researchers and equal interlocutors and finally by parents as associates and consultants. In the long run, school stakeholders, tools and teaching practices must be updated in schools which wish to develop the skills of 21st century to their students and future citizens to be. Educational A.R. can be the means of achieving all these as long as the members of a school community are eager to study and put it in practice.

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STUDENTS LEARNING EXPERIENCE DURING THE COVID 19 PANDEMIC

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ABSTRACT

The spread of the coronavirus around the world in 2020 led to an unprecedented state of education, where students had to stop attending classes in person. Closure of schools has resulted in a dramatic reduction in teaching time in primary and secondary schools, school authorities, educators, parents, and students, have had to take appropriate measures to address this situation (Bertling, et al., 2020). The abstention from learning life lessons of students and their lack in basic skills, estimate that distance education will have a negative impact on student's learning, psychology, and future economic incomes (Azevedo, 2020; Psacharopoulos, 2020). Despite the pessimistic scenarios, there are also optimistic ones, if actions are implemented by governments, educational institutions, and teachers and aimed in the right direction. They will expand and facilitate online access to education for more students and will contribute to further democratization of the educational process and would help to improve educational equality in the post-pandemic world (Olaniran, B. A., 2009; Reimers, 2020; Xe, X. B., 2020).

This research, conducted between February and May 2021 regarding students attending lessons in private tutorial organizations in Greece, aims to investigate how schools, tuition centers and private lessons have responded to the pandemic changes regarding the functioning of educational institutions, as well as how the pandemic has affected students' learning experience.

Descriptive statistics were used to illustrate the distribution of the data and statistical parametric tests, such as Levene's test, ANOVA, t-test, two-way ANOVA and post-hoc tests, were used to accept or reject the following statistical hypotheses:

- *H₀: Subjective impression of learning is independent of place of residence*
- *H₀: Subjective impression of learning is not affected by student's school*
- *H₀: Student's problems are independent of grades*
- *H₀₁: Family support is not affected by gender*
- *H₀₂: Family support is not affected by student's class*
- *H₀₃: Family support is not affected by the interaction of gender and class*
- *H₀: Preparation for the future is not affected by gender*

Regarding the results from the survey, family support on home study has a mean of 2.08 (SD =1.08, Cronbach's Alpha 0.922). Self-directed learning has a mean of 2.67, (SD = 0.73, Cronbach's Alpha 0.76). The optimistic findings of the research are dominated by student's experience from the use of the technological means and their familiarity with them. Students now feel better and prepared for a similar future situation (M = 3.93, SD = 0.74, Cronbach's Alpha 0.85). Subjective impression of learning depends on place of residence, with inhabitants living in urban areas having the lowest mean value. Help from home is more evident in lower educational levels and considering Panhellenic examination candidates is more evident in the male students. Also, male students feel more prepared for the future.

Key Words: Covid-19, Greek education, Student's experience, Online education.

INTRODUCTION

The rapid spread of the coronavirus pandemic around the world led to measures unprecedented for the post-World War II era, worldwide. This state of emergency led to the abrupt closure of productive enterprises, services and thousands of jobs were suspended or completely lost. Naturally, this situation affected educational sector. Schools in Greece closed their physical facilities for lifelong learning and they changed their operating model, in a short time, to online distance learning (Azevedo, J. P., 2021; Hodges, C. B., et al., 2020).

Educational authorities, teachers, parents, and students had to adapt in the new reality and continue the educational process in the most effective way possible. In Greece the experience from the organization and implementation of distance education on a large scale, both in Primary and Secondary education, was minimal to none. There was also insufficiently available functional material equipment. As a result, everyone acquired material, technical infrastructure and basic skills to adjust in this situation in a short time (OECD, 2021). It is also noted that the physical electronics stores were out of order and the equipment was procured exclusively from online stores. The cause of this was lack of rudimentary training of buyers from appliance sellers. Problems with the use of software and electronic teleconferencing platforms were addressed mainly by IT teachers of the educational organizations, who undertook, among other responsibilities, the training of their colleagues in other specialties. The difficulties faced by students were mainly solved by their family environment and the educational staff of their school (Shaw, P. A., & Shaw, A., 2021).

In Greek public schools, Cisco's WebEx teleconferencing platform was used, where user accounts, virtual classrooms, school curriculum, and login links were created by the teachers of each class, with the coordination of the administration of each school unit. The WebEx connection of students and teachers was free of charge (Ministry of education of Greece, 2020). In private educational organizations, schools and tutoring services, various other online platforms were used, such as Zoom, Skype, Messenger, Viber, etc. The cost of using each platform, if it was not free, was covered by the educational organizations.

CONSEQUENCES

The schools were closed for 7 months. More specifically, from March 16, 2020, to May 11, 2020, for the candidates of the Panhellenic exams, May 18 for the rest students of the secondary education and June 1 for Primary schools (Ministry of Education of Greece, 2021), until April 12 for Lyceums and May 10 2021 for Primary and High Schools (Ministry of Education of Greece, 2021). In those periods, lessons were conducted remotely and many teaching hours were lost, due to technical problems, internet connectivity, or other factors. School final examinations were canceled in secondary education for both school periods 2019-2020 and 2020-2021. Four-month evaluation tests were carried out online and their integrity was difficult to be ensured. At the same time, direct relationship and support from teachers to students was lost, as well as the students' interaction, which is necessary for the quintessence of the educational process. As a result, learning gaps were created due to the inability of many students to follow the educational process and the widening of inequalities due to lack of resources (Azevedo, JP, 2021; Hodges, CB, 2021, Shaw, PA, & Shaw, A., 2021). This became more evident in students' performance in 2021 Panhellenic exams (Ministry of Education of Greece, 2021).

Table 1
Mean % performance of Students in the Panhellenic Exams of 2019 and 2021

School subject	Scores between 0 % and 50 %		Scores between 50 % and 100 %	
	2019	2021	2019	2021
Greek Language	22.77	16.11	77.23	83.89
Ancient Greek Language	45.26	31.72	54.74	68.28

History	51.18	47.2	48.82	52.8
Sociology	43.91		56.09	
Latin Language		30.29		69.71
Physics	45.59	39.41	54.41	60.59
Chemistry	40.23	42.12	59.77	57.88
Maths	57.31	61.03	42.69	38.97
Biology	31.56	31.43	68.44	68.57
Biology GE		64.99		35.01
Programming	41.69	41.74	58.31	58.26
Economics	34.31	43.03	65.69	56.97

These effects, however, are predicted to have long-term consequences for the students. A global study states that reduced annual income is expected for those students, up to \$ 1300 per year (Psacharopoulos, G., et al., 2020). Students' socialization, psychology and self-confidence are affected both from their reduced attendance in school classes (Asanov, I., et al., 2021) and from the available family resources invested in children's education (Azevedo, JP, 2021; Bol, T., 2020), which contributes to the widening inequalities for equal learning opportunities. Due to lost jobs and suspensions, outbreaks of violence, symptoms of depression and work resignations were appeared (Radwan, E., et al., 2020).

Distance education has endowed teachers and students with skills and experiences in this different way of working, information seeking, communication, self-regulation, and self-control, which in different circumstances would have never been met in their university studies lives or their professional careers (OECD, 2021). They have acquired the equipment and the ability to communicate and collaborate with people all around the world taking advantage of all the internet benefits and the new way of creating things worldwide (Furlich, S., & Olaniran, B., 2008). Distances are eliminated, the cost of professional housing is reduced, access to information becomes more direct and lifelong learning is more accessible, regardless of age, place of residence, economic and social status (Perera, 2019). Lectures, live lessons, video lessons, modern and asynchronous distance learning (Azevedo, J. P., 2021) are utilized and various combinations of them are adapted to needs and particularities. The more people are given these low-cost opportunities, the more socially marginalized social groups will be developed. Their quality of living will be better and they will adapt more to the new ways of working influenced by technological advances. (Olaniran, BA, 2009; Stewart, V., & Kagan, SL, 2005).

RESEARCH

This research was conducted between February and May 2021 regarding students attending school lessons in two private tutorial organizations in Northwest Greece, "i-tutor" in Ioannina and "Ropi" in Igoumenitsa, Greece. The questionnaire is based on the PISA Global Crises Module (Bertling, et al., 2020) and aims to capture the experiences of students during the restrictive measures due to the COVID-19 pandemic. The variables under investigation may have a formative or a reflective role (e.g., availability of resources, duration of learning experiences) and are usually captured by simple indexes generated by numerical transformations or recoding of variables (e.g., Levels of self-efficacy or support, feelings about learning). These items are usually recorded and interpreted by question groups (OECD, 2017). The questionnaire consists of 90 items (multiple choice, crossover, and Likert scale type 0-5) which are divided into 9 sections and answered by 82 out of 90 students who have subscriptions for the services of the above tutoring organizations. The distribution of the questionnaires and the collection of the answers was done online, as during the research all the educational organizations in Greece continued their remote operation.

The questionnaire was segmented into nine components; demographic characteristics, types of learning resources used while school was closed, school actions/activities to sustain learning, problems with self-directed learning, self-directed learning self-efficacy, family support, subjective impression of learning during school closure, feelings about learning at home and feeling of preparedness for future school closures. 34 (41 %) male students and 48 (59 %) female students responded. 36 (44 %) of them are high school students, 22 (27 %) are Panhellenic exams candidates, 16 (20 %) are middle school students and 8 (10 %) elementary school students. 12 (15 %) students attend lessons in a private school

and 70 (85 %) in a public school. 5 (6 %) participants live in islands, 3 (4 %) in rural areas, 33 (40 %) in semi-rural areas and 41 (50 %) in urban areas. 50 (61%) students use laptops, 20 (24,4%) smart phones, 10 (12,2%) desktop computers and 2 (2,4%) tablets.

RELIABILITIES

For the statistical analysis of our data, and for reliable conclusions, we grouped questions and answers. Validation of groups was done by using reliability analysis by calculating Cronbach's alpha. For testing the normal distribution of the new variable, we used the Shapiro-Wilk test. The questions are related to schools, tutoring schools and private lessons services actions / activities. There are also questions regarding the tutor like "Did he/she send learning materials to study on your own or assignments?" "Did he/she upload educational material on a learning management system or school learning platform? (Blackboard, Edmodo, Moodle, Google Classroom)", "Did he/she ensure that students were completing their assignments?", "Are live virtual classes offered on a platform? (Zoom, Skype, Google Meet, WebEx, Microsoft Teams)", "Did he/she ask you to submit completed school assignments?", "Did he/she give you helpful tips about how to study on your own?", "Did he/she ask about students' feelings?". Cronbach's alpha was equal to 0.612 which is acceptable to proceed with factoring. From the Shapiro-Wilk test, p value is equal to 0.975 greater than the level of significance $\alpha=0.05$, which means that the new variable is normally distributed.

The 7 questions related to Problems with self-directed learning are: Problems with access to digital devices when students need them, Problems with internet access, Problems with finding a quiet place to study, Problems finding time to study because of household responsibilities, Problems with motivating students to do schoolwork, Problems with understanding school assignments, Problems with finding someone who could help students with their schoolwork (Cronbach's alpha = 0.762). From the Shapiro-Wilk test the new variable is normally distributed ($p\text{-value}=0.972>\alpha=0.05$).

The 8 questions related to family support for self-directed learning are: "Did your family help you with your schoolwork?", "Did your family ask you what you were learning?", "Did your family help you creating a program?", "Did your family help you accessing learning materials online?", "Did your family check whether you were completing your school assignments?", "Did your family explain new content to you?", "Did your family help you find additional learning resources?", "Did your family teach you additional topics not related to school assignments?". Cronbach's alpha is equal to 0.922 which is acceptable for factor analysis. From the Shapiro-Wilk test the new variable is normally distributed ($p\text{-value}=0.844>\alpha=0.05$).

The 10 questions about feelings about learning at home are: "Did students felt lonely?", Did students enjoyed learning by themselves?", "Did their teachers were available when they needed them (through emails, chats)?", "Did they feel anxious about schoolwork?", "Were they motivated to learn?", "Did they feel behind in their schoolwork?", "Did they improve their skills in using digital devices for learning purposes?", their teachers were well prepared to provide instructions remotely, were well prepared to learn on their own, and they missed sports and other physical activities organized by their school. Cronbach's alpha is equal to 0.698 which is acceptable for factor analysis. Also, the new variable is normally distributed (Shapiro Wilk test, $p\text{-value}=0.961>\alpha=0.05$).

The 8 questions related to self-directed learning self-efficacy are: Using a learning management system or a school learning platform, using a video communication program, finding learning resources online, Planning when to do schoolwork, motivating to do schoolwork, focusing on schoolwork without reminders, completing schoolwork independently and assessing progress with learning. Cronbach's alpha is equal to 0.851 which is satisfactory to proceed with factor analysis. The new variable is normally distributed (Shapiro Wilk test, $p\text{-value}=0.925>\alpha=0.05$).

STATISTICAL ANALYSIS

As for the statistical hypotheses of our research, we first examine the relationship between subjective impression of learning and residence. Homogeneity of variances of the residence variable is first tested. Levene's test ($p\text{-value} = 0.649>\alpha=0.05$) shows that Homogeneity of variances is not rejected at level of significance $\alpha=0.05$. Next, the null hypothesis H_0 : "Subjective impression of learning is independent of residence" is tested with One Way ANOVA. The null hypothesis is rejected ($p\text{-value} = 0.01 <\alpha=0.05$) and we conclude that subjective impression of learning depends on residence. From the multiple

comparisons table, island areas inhabitants have a larger mean subjective impression of learning than urban areas inhabitants. In addition, semi-urban areas inhabitants have a larger mean subjective impression of learning than the urban areas inhabitants.

Table 2
The Relationship Between Subjective Impression of Learning and Residence – Multiple comparisons

(I) Residence	(J) Residence	Mean Difference (I-J)	Std. Error	Sig.
Island	Rural	1.067	.607	.083
	Semi Urban	.612	.399	.129
	Urban	1.107*	.394	.006
Rural	Island	-1.067	.607	.083
	Semi Urban	-.455	.501	.367
	Urban	.041	.497	.935
Semi Urban	Island	-.612	.399	.129
	Rural	.455	.501	.367
	Urban	.495*	.194	.013
Urban	Island	-1.107*	.394	.006
	Rural	-.041	.497	.935
	Semi Urban	-.495*	.194	.013

*. The mean difference is significant at the 0.05 level.

Next, the relationship between subjective impression of learning and type of School (Public or private) is tested. An independent samples t-test indicates that the above two variables are independent (p-value=0.654> α =0.05).

Furthermore, relationship between problems with self-directed learning and grade is tested. One-Way ANOVA F test indicates that the above two variables are not independent (p-value=.000< α =0.05). From the multiple comparisons table, elementary students have on average more problems than first and second class of Lyceum students (p = .001<.05). They also have on average more problems than the Panhellenic exams candidates (p = .003<.05). Also, middle school students have on average more problems than high school students (p = .000<.05) and on average more problems than the Panhellenic exams candidates (p = .002<.05).

Table 3
Multiple comparisons between problems with self-directed learning and grade

(I) Level	(J) Level	Mean Difference (I-J)	Std. Error	Sig.
Elementary	Middle school	-.12500	.28391	.661
	High School	-.86706*	.25628	.001
	Panhellenic examinations	-.83214*	.27429	.003
Middle school	Elementary	.12500	.28391	.661

	High School	-.74206*	.19700	.000
	Panhellenic examination s	-.70714*	.21992	.002
High School	Elementary	.86706*	.25628	.001
	Middle school	.74206*	.19700	.000
	Panellinies	.03492	.18286	.849
Panellinies	Elementary	.83214*	.27429	.003
	Middle school	.70714*	.21992	.002
	High School	-.03492	.18286	.849

For testing the null hypotheses:

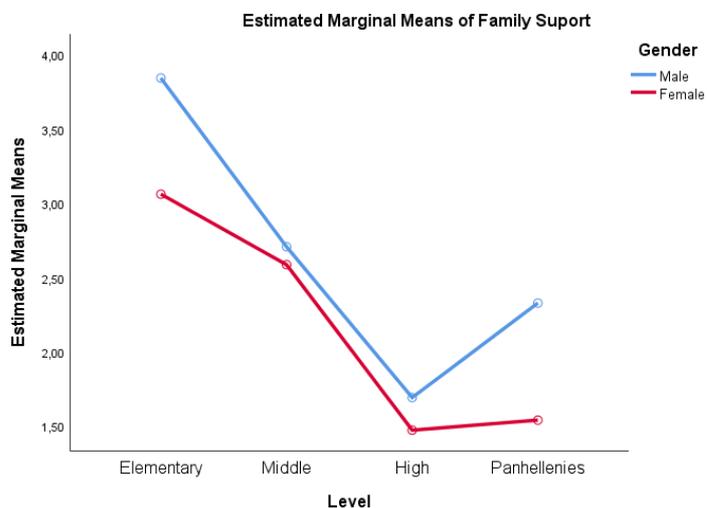
H₀₁: Family support is not affected by gender

H₀₂: Family support is not affected by the student's class

H₀₃: Family support is not affected by the interaction of gender and class

two-way ANOVA analysis was used. A statistically significant effect of student's class on family support ($p = .000 < .05$) was noticed. In addition, gender ($p = 0.048 < .05$) affects family support and the interaction of the two factors (gender and student's class) ($p = 0.591 > 0.05$) was not significant. Finally, substantial differences in family support in primary school and Panhellenic candidates were noticed.

Figure 1
Family support is not affected by the student's class



Finally, we test the relationship between the variables "Preparedness for the future" and "Gender". An independent samples t – test showed that preparation for the future is not affected by gender ($p\text{-value} = 0.012 < \alpha = 0.05$). In the group statistics table, the means are 3.73, 2.96 for males and females respectively. Male students feel more prepared for future school closures compared to female students.

Table 4
Descriptive statistics for preparedness for the future" and Gender

	Gender	N	Mean	Std. Deviation	Std. Error Mean
Preparedness for future	Male	33	3.73	1.008	.176
	Female	48	2.96	1.675	.242

CONCLUSIONS

Family support on home study has a mean of 2.08 (SD =1.08, Cronbach's Alpha 0.922) and self-directed learning has a mean of 2.67, (SD = 0.73, Cronbach's Alpha 0.76). The optimistic findings of the research are dominated by the experience gained by the students from the use of the technological means and their familiarity with them. Students now feel better prepared for a similar future situation with a mean of 3.93, (SD = 0.74, Cronbach's Alpha 0.85). The following results were derived:

- Subjective impression of learning depends on student's place of residence. Also, in urban areas tuition prices are lower.
- Subjective impression of learning is not affected by the student's school
- Problems depend on grades, with students having lower grades also having more problems
- Assistance from home is more evident in students having lower grades and in Panhellenic examination candidates. It is also more evident in the male students of those categories.
- Male students feel more prepared for the future.

The research conclusions and implications can be used by learning services providers, curriculum planners, teachers and parents who face the problems of the education system (Slater, Narver, 2000; Harris, 2002; Helfert, Ritter, & Walter, 2002).

We also suggest qualitative and quantitative analysis of the findings of other similar surveys, as well as repeating the whole analysis with a similar questionnaire when schools operate under normal conditions.

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THE VALUE OF ETHICS IN EDUCATION IN MODERN GLOBALIZED SOCIETY

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ABSTRACT

We live in a globalized society and therefore education should begin by preparing members for this kind of society. Education is focusing its curricula and pedagogical programs on preparing the students for grasping the opportunities and addressing challenges of a global society, balancing local, national and global norms and ethical values in the process of educating them. Such a stance, is, therefore, considered as a pedagogical counter – action to the various challenges and problems, such as complex ethical issues, human rights’ violations, globalization, migration, refugees etc. Therefore, a crucial question raised is how Ethics can make a difference in Education.

Key Words: Education, Ethics, Globalization, Human Rights, Inclusive Education.

PURPOSE – STATEMENT OF THE PROBLEM

Admittedly, an educational system plays a significant role in the modern globalized world. Nowadays, we live in a globalized society and therefore education should begin by preparing members for this kind of society. Consequently, Education is focusing its curricula and pedagogical programs on preparing the students for grasping the opportunities and addressing challenges of a global society (Dill, 2012), balancing local, national and global norms and ethical values in the process of educating them. Such a stance, is, therefore, considered as a pedagogical counter – action to the various challenges and problems, such as complex ethical issues, human rights’ violations, globalization, migration, refugees, cultural differences, identity issues, diversity issues etc. Furthermore, education should insure that inclusiveness, integration and multicultural perspectives are adopted into all aspects of the school life by way of promoting diversity as an edifying learning experience; employing anti-racism and human rights perspectives in school policies and practices; reinforcing educators’ and students’ intercultural understanding and cross – cultural communication skills and eliminating, as much as possible, discriminations and exclusions from the learning experience due to ethnic origin and background (Gluchmanova, 2015). This paper explores the employment of Ethics in the educational processes in connection with contemporary global issues in multicultural and globalized educational environments (Gülcan, 2015). The present paper draws on existing literature research / review and evidence and applies a systematic document analysis / a systematic review. A crucial question raised is how Ethics can make a difference in Education. Ethics reflects our concerns about what is right or wrong, what is good or bad, what is a human right or a duty / a rule, what is beneficial or harmful, about the relation of the individual to itself, about the meaning of life. Accordingly, Immanuel Kant in his Critique of Pure Reason states that “all interest of my reason (the speculative as well as the practical) is united in the following four questions: What can I know? What should I do? What may I hope? What is human?” (Kant, 1781: 677). Undoubtedly, Ethics has a considerable role in Education, in that the scope of Education and particularly within the current globalized world, is to provide people with the capacity of making decisions by their own free will, in order to be ethically responsible and autonomous individuals. Hence, it must be conceded that Ethics defines who we are and is immanent in our code of values (Josefová, 2016; Onyia, 2017). It can be claimed that Education constitutes an ethical endeavor. Without difficulty educators can teach their students norms and rules, while at the same time they cannot easily teach them to obey these rules, unless they teach them first Ethics (Gülcan, 2015). Notably, educational leaders should espouse equal respect and dignity to every person as a moral individual (Gluchmanova, 2015), as well as integrate ethical thinking, ethical decision –

making, ethical deliberation, ethical sensitivity and ethical justification in educational curricula, practices and pedagogical approaches, in order to prepare students for their future role as ethically responsible globalized citizens (Onyia, 2017).

RESEARCH METHODS

The present paper draws on existing literature research and evidence and applies a systematic document analysis (a systematic review). The present review is aimed at overviewing the value of Ethics in Education in the modern globalized society. In particular, this paper explores the employment of Ethics in the educational processes in connection with contemporary global issues in multicultural and globalized educational environments. To this end, a significant research question is: How Ethics can make a difference in Education? Ethics reflects our concerns about what is right or wrong, what is good or bad, what is a human right or a duty / a rule, what is beneficial or harmful. For that purpose, we conducted a systematic literature research in order to formulate a comprehensive review that summarizes different approaches concerning Ethics, Education and globalization. In addition, a list of keywords were used with different combinations, as follows: Education, Ethics, Globalization, Human Rights and Inclusive Education. We also collected relative information and data from certain literature sources, from twelve (12) scientific papers and six (6) books regarding Ethics and Education in the globalized societies, as well as four (4) documents by the United Nations General Assembly – the Universal Declaration of Human Rights (UDHR), the proposal by the InterAction Council – the Universal Declaration of Human Responsibilities, the Principles of Global Ethics – An initial Declaration by the Parliament of the World’s Religions, the Common Framework for the Ethics of the 21st century by the UNESCO division of Philosophy and Ethics regarding the necessity to formulate universal norms, values or principles that could serve as a guide for peaceful and productive interaction among different nations and multicultural societies; impediment to conflicts, disagreements and crises; and collective efforts toward peace, prosperity, inclusion and acceptance; the rule that “we do not do to others what we do not wish to be done to us”. A critical discussion on the value of ethics; the relation between ethics, education and globalization; the feasibility of multiculturalism into each classroom is also included.

In general, a literature review, regarding a set of research queries, is a significant methodological tool to provide the researchers with suitable answers. For instance, reviews are of great use when the researcher wants to assess the theory or the evidence in a specific area or to thoroughly examine the validity or accuracy of a specific theory or a number of theories. In addition, literature reviews are useful when the purpose is to provide an overview of a certain issue or a research problem. It can be used, for instance, to define deficiencies during the research or merely debate upon a particular issue. According to the aforementioned, there are a number of existing guidelines for literature reviews. Depending on the methodology required to succeed the purpose of the review, all types can contribute to conducting the research and to attain a specific goal. The types of review include the systematic review, the semi-systematic review, and the integrative review. Under the right circumstances, all of these review forms can be of significant help to answer a particular research question (Snyder, 2019).

RESULTS & DISCUSSION

i. The value of Ethics

Ethics, the most significant branch of philosophy, is related to moral / ethical aspects of human relationships and ethical conduct and therefore it cannot be excluded from all aspects of our everyday life. A crucial question raised is how Ethics can make a difference in Education. Ethics reflects our concerns about what is right or wrong, what is good or bad, what is a human right or a duty / a rule, what is beneficial or harmful, about the relation of the individual to itself, about the meaning of life. Accordingly, Immanuel Kant in his “Critique of Pure Reason” states that “all interest of my reason (the speculative as well as the practical) is united in the following four questions: What can I know? What should I do? What may I hope? What is human?” (Kant, 1781: 677).

Kant’s syllogism about freedom and morality / ethics originates from fundamental theories of educational policies, such as development, learning process and experience and education. Particularly, this issue arises from the concept of the transcendental freedom and the creed of the two selves or characters that is combined with it. According to Kant, the comprehensible character of an individual, seen as the source of free agency, is laid outside of the empirical sphere. In the case that the free self is non-empirical, namely it is not rooted to the temporal and causal order of the natural world, then it is

not evident how it can be developed and how its development can be affected by the educational process. It can be derived that educating a free and autonomous individual, as well as an education for freedom, appear incompatible, since freedom and morality are intimately bind together in Kant's notion. Consequently, the possibility of moral / ethical education is disputable. However, Kant not only doubts, but he ardently advocates in favour of the significance of moral / ethical education. He emphasizes the fact that individuals can be morally / ethically improved only through education. In accordance with the aforementioned, the child's moralization responds to the final purpose of the educational process. Specifically, before the child can be moralized, the child must be cared for, disciplined, cultivated and civilized. In virtue of the above argument one might allude that the capacity for ethical agency evolves gradually within a child. Therefore, Kant's moral / ethical philosophy leaves no doubt that morality unfolds gradually. Notably, cultivation regards the evolution of certain skills, talents and competences that are worthy of pursuing one's purposes. Moreover, civilization fosters the child's prudence – "*phronesis*" that is his / her ability to participate successfully in society, to be an autonomous ethical citizen. Nevertheless, the highest attainable goal or aim of educational curricula constitutes the child's moralization. Once the child becomes a moral / ethical individual, he / she constitutes an integrated personality (Giesinger, 2012).

This reading explains why Kant, in the *Lectures on Pedagogy*, supports the argument that children should "acquire the disposition to choose nothing but good ends" (Kant, 1803: 9, 450). Kant then proceeds by stating which ends should be considered "good", granting a simplified form of the categorical imperative: "Good ends are those which are necessarily approved by everyone and which can be the simultaneous ends of everyone" (Kant, 1803:9, 450). At the same time, Kant specifies that the child should learn to act "from his own maxims" (Kant, 1803: 9,450), he should do the good, because it is good and perceive the reasons of the actions and their origin from the concepts of duty and not from specific incentives. Admittedly, this type of conduct signifies the commencement of the moralization of the individual. Most notably, Kant acknowledging the significance of the child's moralization, drew attention to the divergence between morality and the physical education, admitting that if we compared the physical education with the moral / ethical education, we were still very far from fulfilling the need for that other kind of culture. Kant held that in order to moralize a child, recourse must not be the ordinary motives of discipline-habits, imitation, rewards and punishments. In essence, Kant is committed to the idea that moral conduct entails practical reasoning every time the individual needs to make a moral / ethical choice. The former denote that if the child transgress the moral law, namely if the child behaves immorally / unethical, then the teacher must consider the child's behavior an offence against one or more individuals. Kant concludes on this basis that education resolves itself into two components, namely how to compel the child without violating his moral freedom and how to impose on the child's will, while striving for his liberty (Davids, 1900: Introduction).

He then proceeds by stating that "we must see that the child does right on account of his own "maxims", and not merely from habit; and not only that he does right, but that he does it because it is right. For the whole moral value of actions consists in "maxims" concerning the good" (Kant, 1803: 77, par. 72). The underlying principle in Kant's perspective of morality is that moral education as well as moral commitment presupposes acting rightly and justly. It is plausible to discern that the word "maxim" constitutes for Kant a significant term in that it must be comprehended as a set of general principles about what is right and just or what is wrong (Kant, 1803: note 1). Accordingly, he stresses that "moral culture must be based upon "maxims", not upon discipline; the one prevents the evil habits, the other trains the mind to think. We must see, then that the child should accustom himself to act in accordance with "maxims" and not from certain ever-changing "maxims" .Through discipline we form certain habits, moreover, the force of which becomes lessened in the course of years. The child should learn to act according to "maxims", the reasonableness of which he is able to see for himself. One can easily see that there is some difficulty in carrying out this principle with young children, and that moral culture demands a great deal of insight on the part of parents and teachers. Maxims ought to originate in the human being as such. In moral training we should seek early to infuse into children ideas should be taught as to what is right and wrong. If we wish to establish morality, we must abolish punishment. Morality is something so sacred and sublime that we must not degrade it by placing it in the same rank as discipline. The first endeavour in moral education is the formation of character" (Kant, 1803: 84, par. 77-78).

As he remarks explicitly in the *Lectures on Pedagogy* in order individuals to become moralized they "must acquire the disposition to choose nothing but good ends. Good ends are those which are

necessarily approved by everyone and which can be the simultaneous ends of everyone” (Kant, 1803: 9, 450). He then proceeds by stating that “the human being who is supposed to first develop his predispositions toward the good. Providence has not placed them already finished in him; they are mere predispositions and without the distinction of morality” (Kant, 1803: 9, 446). According to Kant “the human being is destined by his reason to live in a society with human beings and in it to cultivate himself, to civilize himself and to moralize himself by means of the arts and sciences” (Kant, 1803: 9, 450). Admittedly, at birth human beings are not independent and autonomous moral agents, but utterly dependent human beings, who must be gradually educated as well as instructed into morality. Notably, the suitable educational method, as Kant suggests, should emanate from nature. Therefore, schools must not ignore nature (Zöller & Loudon, 2007).

Undoubtedly, Ethics has a considerable role in Education, in that the scope of Education and particularly within the current globalized world is to provide people with the capacity of making decisions by their own free will, in order to be ethically responsible and autonomous individuals. Hence, it must be conceded that Ethics defines who we are and is immanent in our code of values (Josefová, 2016; Onyia, 2017).

ii. Ethics, Education and Globalization

Addressing global citizenship education is one of the most significant educational issues. Consequently, educators worldwide need to be cognizant of and vigilant to the efficacious shift toward a moral / ethical education that globalization requires (Dill, 2012; Staudt, 2001). Such a stance, is, therefore, considered as a pedagogical counter – action to the various challenges and problems, such as complex ethical issues, human rights’ violations, globalization, migration, refugees, cultural differences, identity issues, diversity issues etc. Students may have the potential to unfold a critical disposal towards some of the most oppressive ethical issues in education in modern societies. Furthermore, education should insure that inclusiveness, integration and multicultural perspectives are adopted into all aspects of the school life by way of promoting diversity as an edifying learning experience; employing anti-racism and human rights perspectives in school policies and practices; reinforcing educators’ and students’ intercultural understanding and cross – cultural communication skills and eliminating, as much as possible, discriminations and exclusions from the learning experience due to ethnic origin and background (Chowdhury, 2016; Gluchmanova, 2015).

How is multiculturalism feasible into each classroom? 1. Provide a basic education for all students (international or not, migrants, vulnerable groups etc.) and treat all students with the same respect, humanity and understanding; 2. Address language and cultural norms, namely avoid legends that are associated with certain cultures, avoid using jargon or gestures while speaking, apply a variety of forms of communications to convey ideas; 3. Transform teaching process into a learning experience, namely integrate the students’ cultures into the curriculum; 4. Embrace and integrate every student (international or not, migrants, vulnerable groups etc.) acknowledging that every individual has the immanent right to ethical treatment; 5. Students and young people in general should oppose to negative dispositions, such as suspicion, indifference, hostility, exclusion and racism against “*the other, the foreigner*” and develop palpable bonds of solidarity, humanity, acceptance, tolerance and inclusiveness (Gluchmanova, 2015; Prasad, 2019).

It must be conceded that in recent years a number of researches have drawn particular attention to the necessity to formulate universal norms, values or principles that could serve as a guide for peaceful and productive interaction among different nations and multicultural societies; impediment to conflicts, disagreements and crises; and collective efforts toward peace, prosperity, inclusion and acceptance. Of note, a provision of global ethics can be found in a set of documents, namely in the Universal Declaration of Human Rights (UDHR) adopted by the General Assembly of the United Nations in 1948, where article 27 discusses that “1. Everyone has the right freely to participate in the cultural life of the community, to enjoy the arts and to share in scientific advancement and its benefits. 2. Everyone has the right to the protection of the moral and material interests resulting from any scientific, literary or artistic production of which he is the author.” (p.65). While article 29 indicates that “(1) Everyone has duties to the community in which alone the free and full development of his personality is possible. (2) In the exercise of his rights and freedoms, everyone shall be subject only to such limitations as are determined by law solely for the purpose of securing due recognition and respect for the rights and freedoms of others and of meeting the just requirements of morality, public order and the general welfare in a democratic society. (3) These rights and freedoms may in no case be exercised contrary to the purposes and principles of the United Nations” (UDHR, 1948: 69).

Furthermore, the Universal Declaration of Human Responsibilities, which complemented the Human Rights Declaration and was proposed by the Interaction Council suggests a set of human ethical standards. In particular, article 13 stresses that “No politicians, public servants, business leaders, scientists, writers or artists are exempt from general ethical standards, nor are physicians, lawyers and other professionals who have special duties to clients. Professional and other codes of ethics should reflect the priority of general standards such as those of truthfulness and fairness.” Obviously, the Interaction Council holds that globalization of the world economy is connected with globalization of the world’s issues. For the reason that global interdependence requires that we must live with each other in harmony and peacefully, therefore individuals need rules and constraints. As such, ethics are the minimum standards that make a diverse society plausible. Without ethics and self-constraint, the survival of the fittest would prevail. Evidently, the world requires a code of ethics / a system of ethics to lean on (UDHR, 1997).

It is important to point out that there is no necessity for an intricate system of ethics to guide human conduct and action. However, there is one fundamental rule that if agreed and respected, would assure just and honest human relations, namely the *Golden Rule*. Specifically, the *Golden Rule* entails that “we do not do to others what we do not wish to be done to us” (UDHR, 1997: 8). Derived from the universally agreed *Golden Rule*, the “Principles of Global Ethics – An initial Declaration of the Parliament of the World’s Religions” (Parliament of the World’s Religions, 1993) introduced six ethical principles, which can be envisaged as responsibilities and duties taught in schools worldwide (Staudt, 2001): i. Every human being must be treated humanely; ii. Commitment to a culture of non-violence and respect for Life; iii. Commitment to a culture of solidarity and a just economic order; iv. Commitment to a culture of tolerance and a life of truthfulness; v. Commitment to a culture of equal rights and partnership between men and women; vi. Commitment to a culture of sustainability and care for the Earth (Parliament of the World’s Religions, 1993).

In view of the above, global ethics constitute a core of shared ethical values and principles, such as respect for life, liberty, honesty, justice, human dignity, equity and integrity, originating from the principle of the *Golden Rule*. Further, a set of rights and responsibilities, granting the minimum ethical guidance people need in order to confront with global issues, are also included in the core of ethical values. In essence, these rights and responsibilities contribute to the creation of a global civil society. Especially, the rights include the right to a secure life, the right to equitable treatment, the right to a chance to earn a fair living, the right to equal access to information and the right to equal access to the global commons. The responsibilities, on the other hand, include: to take into consideration the impact and the consequences of our actions on others, to promote equity, including gender equity, to protect and defend the interests of future generations, to guard the global commons, to preserve humanity’s cultural and intellectual traditions, to be active participants in governance and to make efforts to eradicate corruption (Kim, 1999).

Thus, students comprehend the significance of global ethics, admit its interaction to everyday issues and acquire the indispensable skills to practice such values. In fact, establishing and providing a right, just, honest and civil school environment will help students to succeed their ethical development as well as to introduce relationships built on trust, honesty, dignity, mutual respect and justice (Clark, 2003; Dill 2012; Gluchmanova, 2015; Staudt, 2001). This reading explains why Ryan and Bohlin support the following: “Students need to be moral actors, not just moral talkers” (Ryan & Bohlin, 1999: 146).

CONCLUDING REMARKS – IMPLICATIONS

At this point the question arising is: How can educators apply moral global literacy? Educators through the teaching method apply the technique of “Six Es” by Ryan and Bohlin in order to promote moral / ethical development within each student, within the classroom and the school environment. Specifically, the technique of “Six Es” includes: “i) Example: Human beings are not born civilized; we have to learn almost everything important by example. By mentioning real contemporary samples or from earlier period of our history, we can imprint in children’s mind a vivid picture of what a good human being is like-that, ii) Ethos: Second E, comes from a Greek term for the ethical environment that must be an integral part of school life. It means that instead of talking about general and theoretical issues in morality such as “inappropriate behavior” or “stages of moral development”, teachers and other school personnel can create a place where kids can’t put one another down, where kids can get a

hearing, and where there is a sense of fairness and respect, iii) Explanation: The third E, “explanation” is not explaining course materials such as quadratic equations or the causes of the Civil War; but explaining ethical rules, in plain language and related to real life situations, iv) Emotion: However, there are limits to explaining. It doesn’t always work. There are times when you’ve really got to appeal to the moral “emotions” the fourth E. There are also exhortations that inspire people—appeals not so much to the mind, but to the heart. You can think of character education as teaching children to know the good, to love the good, and to do the good, v) Experiences: The fifth E, “experiences”, is related to moral action. Today, many children have few opportunities to become moral actors because they’re not really needed by their families. One of the most constructive movements in schools is giving kids opportunities to behave in responsible, compassionate, moral ways in the larger community, iv) Expectations for Excellence: The last E is “expectations for excellence”. Children have the tendency to rise to the occasion and are not inspired by mediocrity. Striving for excellence doesn’t mean perfectionism. Excellence represent doing one’s best, while perfectionism demands an all or nothing approach to goal achievement” (Balraj, 2019; Clark, 2003; Meidari et. al., 2016; Rosenberg, 2015; Ryan & Bohlin, 1999; Staudt, 2001).

It can be claimed that Education constitutes an ethical endeavor. Without difficulty educators can teach their students norms and rules, while at the same time they cannot easily teach them to obey these rules, unless they teach them first Ethics (Gülcan, 2015). Notably, educational leaders should espouse equal respect and dignity to every person as a moral individual (Gluchmanova, 2015), as well as integrate ethical thinking, ethical decision – making, ethical deliberation, ethical sensitivity and ethical justification in educational curricula, practices and pedagogical approaches, in order to prepare students for their future role as ethically responsible globalized citizens (Onyia, 2017).

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CHILDREN WITH DISABILITIES AND THE RIGHT TO EDUCATION: THE CASE FOR INCLUSION

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ABSTRACT

Worldwide children with disabilities represent one of the most vulnerable and marginalized groups of children, encountering multiple barriers to the full enjoyment of their rights, including their right to education with long-lasting effects on their life course. Against this backdrop, this paper argues that the establishment of an inclusive education environment constitutes a human rights imperative for providing quality education to all children, while ending discriminatory attitudes against children with disabilities with the ultimate aim the development of inclusive and equitable societies. Hence, this paper examines the value of inclusive education for children with disabilities through a human rights lens.

Key Words: Children, Disability, Human Rights, Inclusive Education, Right to Education.

STATEMENT OF THE PROBLEM AND PURPOSE

Nearly the 15 % of the world's population is estimated to be living with some type of disability, of whom around 93 to 150 million are children (World Health Organization and World Bank, 2011). Admittedly, children with disabilities worldwide constitute one of the most vulnerable and marginalized groups of children, facing constantly multiple and disproportionate barriers to the full enjoyment of their rights and to their inclusion in society in comparison to those children without disabilities (World Health Organization and World Bank, 2011; UNICEF, 2012). Evidence indicates that children with disabilities experience prejudice, discriminatory attitudes in society and particularly at every level of the education system and are often perceived as inferior relative to those children without disabilities (World Health Organization and World Bank, 2011; Broderick and Ferri, 2019; UNESCO, 2021). The first World Report on Disability, prepared jointly by the World Health Organization (WHO) and the World Bank (WB), in fact, emphasizes that children with disabilities experience structural discrimination and negative attitudes in crucial areas of daily life, such as in education, on the grounds of their disability compounded by other socioeconomic circumstances such as poverty and social isolation and marginalization (World Health Organization and World Bank, 2011). Critically, many children with disabilities encounter significant vulnerabilities and severe disability-based discrimination when trying to access education at every level of the education system (such as segregation, harassment and bullying), thereby facing exclusion from mainstream education opportunities with adverse effects on their life course (such as, reduced employment opportunities etc.) (World Health Organization and World Bank, 2011; Broderick and Ferri, 2019; UNESCO, 2021). Hence, such worrying trends largely uncover that the right of children with disabilities to inclusive education is being widely neglected and violated (CRPD, 2006; UNICEF, 2012). Against this backdrop, the purpose of this paper is to examine the value of inclusive education for children with disabilities through a human rights lens. Ultimately, this paper seeks to contribute to the development of the rights of children with disabilities in relation to inclusive education and calls for a critical appraisal of the current barriers or boundaries emanating from national law, policies and strategies when inclusive education is under consideration.

RESEARCH METHODS

This paper builds on existing frameworks, namely is based on a systematic legal research and analysis of international human rights doctrines, literature- scientific research of existing body of work as well as document analysis that is relevant to the topic under discussion. The applied interpretation is in accordance with the treaty interpretation rules as enshrined in the Vienna Convention on the Law of Treaties and particularly in its Articles 31 (general rule of interpretation) and 32 (supplementary means of interpretation). The literature-scientific research included publicly available documents, reports, peer-reviewed studies and other publications primarily of human rights bodies at the United Nations level (e.g., United Nations Committee on the Rights of Persons with Disabilities). These sources were

published in English and tend to provide useful interpretation material for the role of inclusive education towards promoting equal education opportunities for all children and especially for those with special educational needs. Essentially, such sources provide further clarification on the content and process of inclusive education by using a rights-based approach.

RESULTS AND DISCUSSION

A. INCLUSIVE EDUCATION: CONCEPTUALIZATION AND BARRIERS

Since the 1990s a series of international conferences elaborated to a degree upon the meaning of inclusive education (De Beco, 2022). In 1990 the World Conference on Education for All Meeting Basic Learning Needs, held in Jomtien, Thailand adopted the World Declaration on Education for All and the Framework for Action to Meet Basic Learning Needs. The Declaration (1990) emphasized in Article 3 that the learning needs of persons with disabilities require special attention and as such ‘steps need to be taken to provide equal access to education to every category of disabled persons as an integral part of the education system’. Further, in June 1994 the UNESCO World Conference on Special Needs Education held in Salamanca, Spain resulted in the adoption of the Salamanca Statement on Principles, Policy and Practice in Special Needs Education and a Framework for Action on Special Needs Education (henceforth the Salamanca Statement). According to the Salamanca Statement (1994: iii) inclusive education proclaims the ‘recognition of the need to work towards “schools for all” - institutions which include everybody, celebrate differences, support learning, and respond to individual needs’. In this regard, the Salamanca Statement (1994: para. 2) called upon all governments: (1) to design education systems and to implement educational programmes that take into account the diverse characteristics and needs of students; and (2) to ensure that children with special educational needs have access to regular schools that accommodate them within a child-centered pedagogy capable of meeting these needs. Additionally, the Salamanca Statement (1994: paras. 2-3) urged all governments to ‘adopt as a matter of law or policy the principle of inclusive education’ by explicitly underlying that ‘regular schools with this inclusive orientation are the most effective means of combating discriminatory attitudes, creating welcoming communities, building an inclusive society and achieving education for all’. In a similar vein, the UNESCO in the Guidelines for Inclusion: Ensuring Access to Education for All defines inclusion in education ‘as a process of addressing and responding to the diversity of needs of all learners through increasing participation in learning, cultures and communities, and reducing exclusion within and from education. It involves changes and modifications in content, approaches, structures and strategies, with a common vision which covers all children of the appropriate age range and a conviction that it is the responsibility of the regular system to educate all children’ while also emphasizing that inclusion is concerned with the identification and removal of barriers (UNESCO, 2005: 13 and 15). Moreover, not coincidentally, in 2015 inclusive education emerged as a cross-cutting issue in the UN General Assembly’s 2030 Agenda for Sustainable Development and in the Sustainable Development Goals, particularly in the Sustainable Development Goal 4 where it is explicitly stressed that States must ‘ensure inclusive and equitable quality education and promote lifelong learning opportunities for all’ (UN General Assembly, 2015).

Meanwhile, within the disability context, the UN Committee on the Rights of Persons with Disabilities, the oversight body for the implementation of the Convention on the Rights of Persons with Disabilities, went further by mapping out the barriers that impede access to inclusive education for persons with disabilities in the General Comment No. 4. Accordingly, such barriers can be attributed, inter alia, to: (1) the failure to understand or implement the human rights model of disability, under which the barriers within the communities and societies exclude persons with disabilities; (2) the persistent discrimination against persons with disabilities; (3) the lack of knowledge about the nature and advantages of inclusive and quality education, and diversity in learning for all; (4) the lack of outreach to all parents combined with the lack of appropriate responses to support requirements, leading to misplaced fears, and stereotypes, that inclusion will cause a deterioration in the quality of education, or otherwise impact negatively on others; (5) the lack of disaggregated data and research, necessary for accountability and program development, hindering the implementation of effective policies and interventions to promote inclusive and quality education; (6) the lack of political will tightly bound with the lack of technical knowledge, and capacity in implementing the right to inclusive education including insufficient education of all teaching staff; (7) the inappropriate and inadequate funding mechanisms to provide incentives and reasonable accommodations for inclusion of students with disabilities, inter-ministerial coordination, support and sustainability; (8) the lack of legal remedies and

mechanisms to claim redress for violations of the right to inclusive education (UN Committee on the Rights of Persons with Disabilities, 2016: para. 4).

B. INCLUSIVE EDUCATION FOR CHILDREN WITH DISABILITIES: HUMAN RIGHTS FRAMEWORK

The discussion will now shift to a brief examination of the extent to which a human rights approach to education in general and to inclusive education in particular has the potential to provide a comprehensive framework for action towards effectively addressing barriers encountered by children with disabilities at every level of the education system. Within this context, the Universal Declaration of Human Rights (UDHR, 1948) broadly affirms in Article 26 that everyone has the right to education, involving the right to free and compulsory elementary education and to equal access to higher education as well as a prior right of parents to choose the kind of education that shall be given to their children. Hence, this provision entails a combination of claims requiring both non-interference and positive state action in the realization of the right to education, namely it comprises the two aspects of the right to education, the 'freedom' and the 'social' aspect (Nowak, 2001; De Beco, 2022). In a similar vein, the International Covenant on Economic, Social and Cultural Rights (ICESCR, 1966) recognizes in Article 13 read in conjunction with Article 14 the right of everyone to education and contains a number of specific state obligations to develop affirmative action relating to primary, secondary and higher education, underlying at the same time the principle of equal access to education. Moreover, the Convention on the Rights of the Child (CRC, 1989) under Article 28 read in conjunction with Article 2 stipulates the right to education of every child on the basis of equal opportunity, while the CRC in Article 29 recognizes the aims and objectives of education in terms of promoting the fullest possible development of the child's personality. Notably, in 2007 the Committee on the Rights of the Child, the international body responsible for overseeing governments' compliance with the Convention, in a General Comment on the rights of children with disabilities acknowledges the value of inclusive education and explicitly stresses that 'inclusive education should be the goal of educating children with disabilities' while urging States which have not yet begun a programme towards inclusion to take the necessary measures to achieve this goal (UN Committee on the Rights of the Child, 2007: para. 66). Additionally, the UNESCO Convention against Discrimination in Education (1960) declares the right of everyone to education without discrimination and on the basis of equality of opportunity.

Meanwhile, in the disability context, the Standard Rules on the Equalization of Opportunities for Persons with Disabilities (1993) provide in Rule 6 that States should acknowledge the principle of equal primary, secondary and tertiary educational opportunities for children, youth and adults with disabilities in integrated settings as well as ensure that the education of persons with disabilities constitutes an integral part of the education system (UN General Assembly, 1994: 15). Notwithstanding, the most detailed provision on the aims and objectives of the right to inclusive education in international law can be found in Article 24 of the UN Convention on the Rights of Persons with Disabilities (CRPD, 2006). In particular, the CRPD recognizes in Article 24(1) the right of persons with disabilities to education without discrimination and on the basis of equal opportunity to be realized through an inclusive education system at all levels. Most notably, CRPD constitutes the first legally binding instrument that refers to the concept of quality inclusive education (UN Committee on the Rights of Persons with Disabilities, 2016). In fact, Article 24(1) CRPD addresses the aims and objectives of inclusive education by requiring States parties to ensure an inclusive education system at all levels and lifelong learning directed to: (a) the full development of human potential and sense of dignity and self-worth, and the strengthening of respect for human rights, fundamental freedoms and human diversity; (b) the development by persons with disabilities of their personality, talents and creativity, as well as their mental and physical abilities, to their fullest potential; and (c) enabling persons with disabilities to participate effectively in a free society. Additionally, Article 24(2) (b) CRPD mandates States to ensure that persons with disabilities can access an inclusive, quality, and free primary education and secondary education on an equal basis with others in the communities in which they live. Article 24 CRPD constitutes a significant provision given its contribution and interrelation to other substantive rights and principles enshrined in CRPD, involving accessibility (Article 9 CRPD) and equality and non-discrimination (Article 5 CRPD). In fact, this state obligation under Article 24(2) (b) CRPD should be read in conjunction with Article 9(1) (a) CRPD which requires States, *inter alia*, to take appropriate measures to make schools accessible to persons with disabilities.

At the same time, the UN Committee on the Rights of Persons with Disabilities, the oversight body for the implementation of the CRPD, in its General Comment No. 4 has drawn attention to the importance

of inclusive education for upholding the right to education for all at all times (UN Committee on the Rights of Persons with Disabilities, 2016). The Committee has affirmed in its General Comment No.4 on the right to inclusive education that inclusive education must be perceived as: (1) a fundamental human right of all learners in that education is the right of the individual learner, and not, in the case of children, the right of a parent or caregiver; (2) a principle that values the well-being of all students, respects their inherent dignity and autonomy as well as acknowledges individual requirements and ability to effectively be included in and contribute to society; (3) a means of realizing other human rights given that inclusive education constitutes the primary means by which persons with disabilities can escape poverty, obtain the means to participate fully in their communities, and be safeguarded from exploitation, while at the same time achieving inclusive societies; and (4) the outcome of a process of continuing and pro-active commitment to remove barriers hindering the right to education, together with changes to culture, policy and practice of regular schools to accommodate and effectively include all students (UN Committee on the Rights of Persons with Disabilities, 2016: para.10).

Moreover, by drawing on the interpretation adopted by the UN Committee on Economic, Social and Cultural Rights in its General Comment No.13 on the right to education, the Committee on the Rights of Persons with Disabilities has particularly emphasized that an inclusive education system must comprise four interrelated and essential features, namely availability, accessibility, acceptability and adaptability (collectively called as the 4As) (UN Committee on the Rights of Persons with Disabilities, 2016). With regard to availability, the Committee on the Rights of Persons with Disabilities has indicated that public and private educational institutions and programmes must be available in sufficient quantity and quality. To this end, the Committee went further by requiring States parties to guarantee a broad availability of educational places for learners with disabilities at all levels throughout the community (UN Committee on the Rights of Persons with Disabilities, 2016: para. 20). In relation to accessibility, the Committee has indicated that accessibility has four overlapping dimensions: non-discrimination, physical and information accessibility and affordability. Accessibility represents a significant parameter to inclusive education as it encompasses access to education without discrimination by requiring the environment of students with disabilities to be designed in such a way to foster inclusion as well as to guarantee their equality throughout their education; physical and information accessibility which requires the entire education system to be accessible, namely within safe physical reach (e.g., safe, secure and accessible public transport etc.), accessibly built environment including schools and all other places of education (e.g., existence of ramps, lifts in education facilities etc.) and/or accessible via information communication technology, including information and communication, comprising ambient or frequency modulation assistive systems, curriculum, education materials, teaching methods, assessment and language and support services; and affordability which requires education at all levels to be affordable for students with disabilities and reasonable accommodation not to entail additional costs for learners with disabilities (UN Committee on the Rights of Persons with Disabilities, 2016: paras. 21-23 and 26). In terms of accessibility, the Committee made the further point that accessibility constitutes a prerequisite for the full and equal participation of persons with disabilities in society (UN Committee on the Rights of Persons with Disabilities, 2016: para. 47). Additionally, with respect to acceptability, the Committee has underpinned that it entails the obligation to design and implement all education-related facilities, goods and services with due consideration and respect for the requirements, cultures, views and languages of persons with disabilities. Thereto, States parties are required to adopt affirmative action measures to ensure that education is of good quality for all (UN Committee on the Rights of Persons with Disabilities, 2016: para. 24). Finally, adaptability is also a significant factor in the development of inclusive education practices. The Committee has explained that each student learns in a unique manner and as such it is essential to create adaptable learning environments and develop instruction to meet the diverse needs of all learners (UN Committee on the Rights of Persons with Disabilities, 2016: para. 25). Essentially, it becomes obvious that the 4As approach of the Committee to inclusive education requires that equality and non-discrimination principles, well-embedded in Article 5 CRPD and further elucidated by the Committee on the Rights of Persons with Disabilities in its General Comment No. 6 on equality and discrimination (2018), should become integral components of inclusive education practices, thereby contributing to accessible education facilities and ultimately to equal opportunities for children with disabilities.

Within this context, employing inclusive education practices from a disability rights perspective can enable decision-makers in the education domain to effectively and timely identify, assess and respond to existing and potential challenges to the benefit of children with disabilities. Essentially, the human rights framework offers valuable guidance for establishing a concrete regulatory framework towards

the design and development of an inclusive education environment to the benefit of children with disabilities and the whole society. Crucially, without a human rights approach to inclusive education, children with disabilities will remain at risk of marginalization as well as they will continue to face considerable barriers in accessing quality education on an equal basis with those students without disabilities.

IMPLICATIONS: LOOKING AHEAD

Undoubtedly, the realization of the right to inclusive education for children with disabilities should no longer remain an elusive goal (UN Committee on the Rights of the Child, 2007; UN Committee on the Rights of Persons with Disabilities, 2016). From the preceding analysis it is plausible to discern that a human rights approach to inclusive education tends to identify established frameworks for action entailing legal obligations and tools so as to regulate and evaluate the general education system with the immediate and ultimate goal the enjoyment of the right to education by all children without discrimination and on the basis of equality of opportunity. Looking forward, it must be conceded that the general education system should be framed as a matter of equity in consistency with human rights principles and standards for ensuring access to and completion of quality education for all children. This would require the active participation of the intended beneficiaries in the decision-making processes in order to make the experiences and concerns of children with disabilities an integral component of the design and development of inclusive education policies as well as regulatory monitoring and enforcement on the part of the States. To this end, the findings from this paper can have a positive impact on law, policies and practices in the field of education. They can be used to evaluate whether there are sufficient regulatory guarantees of inclusive education for children with disabilities in the current laws and policies at country level; and also provide insights for the future development and/or advancement of national educational strategies especially when cases of violations of the right of children with disabilities to education continue to occur.

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EDUCATION POLICY

TRANSNATIONAL ORGANIZATIONS AND RECONSTRUCTION OF NATIONAL EDUCATION POLICY.

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ABSTRACT

Globalization has had a profound effect on education and has made it necessary to move educational ideas, institutions or practices across international borders, which is referred to as educational transfer. The formation of an international education policy discourse has been facilitated by the political empowerment of supranational organizations, by the evolution of countries into nodes of these supranational governance networks, by the institutional shrinkage of the welfare state and by the various forms of globalization (Zmas, 2007). In the modern world system, the supranational institutions of government due to their enhanced role have a catalytic effect on the relationship between learning and technology, on the review of the priorities of the curricula, on the improvement of the educational cooperation between the countries. In this paper, an approach was attempted according to the ways in which supranational organizations influence the educational development of their Member States. An attempt was made to categorize them with a parallel reference of examples based on the Cypriot or Greek context. It was then assessed whether and to what extent these effects gradually lead to the convergence of national education systems in the age of globalization.

Key Words: globalization, supranational institutions, national education policy.

INTRODUCTION

Globalization has affected education in many ways and has made it necessary to move educational ideas, institutions or practices across international borders, which is referred to as educational transfer. International organizations, especially in recent years, have emerged as active participants in the production of educational policy. The Bologna Declaration allowed them to take part in discussions on European education, and the Lisbon Agenda formally legitimized this participation. Thus, the growing strengthening of their role, as well as the development of information technology and technology, have made them promoters of European and non-European education in countries that do not have access to it. International organizations have become the European Commission's greatest allies in its quest to create a solid education policy, which will lead to the convergence of the Member States' education systems.

In the modern world system, the supranational institutions of government due to their enhanced role have a catalytic effect on the relationship between learning and technology, on the revision of the priorities of the curricula, on the improvement of the educational cooperation between the countries. The magnitude and intensity of these effects on the educational policy of the states is becoming greater. According to Hirst and Thompson (1996), the power of states in policy-making has been limited and their central function is largely to provide legitimacy and ensure the efficiency of the speech of supranational mechanisms.

In the present work, an approach was first taken to the ways in which supranational organizations influence the educational development of their Member States. An attempt was made to categorize them with a parallel reference of examples based on the Cypriot or Greek context. It was then assessed whether and to what extent these effects gradually lead to the convergence of national education systems in the age of globalization.

Ways of transnational organizations influencing national education systems.

The power of nation states has long been questioned. At the dawn of the 21st century, nation-states seek to strike a balance between a variety of challenges that strongly challenge their once-powerful power. The demands of the world market for the opening of borders in the name of the free movement of goods, capital, services and labor are increasing, while at the same time the presence of

supranational organizations and non-governmental organizations in the international arena is becoming stronger. As Stamelos and Vassilopoulos (2004) observe, the traditional and one-dimensional educational system with a strictly predetermined completion date and a specific student audience is transformed into a multifaceted, multi-level and communicating network of educational offers that will never end, will not work in contrast to work, and will affect the entire population.

The gradual networking of states under the supervision of supranational organizations has led to the emergence of the latter as important factors in shaping educational policy. In the field of education, this role has been taken over by the European Union, which in cooperation with the OECD aims at the systematic comparison of various teacher education and training systems. In this context, their services, such as Eurydice, collect information and statistics as global think tanks, to identify common challenges or adversities that national education systems face. According to Walkenhorst (2008), the phenomenon of globalization, which, as mentioned, is mainly associated with the development of supranational governance networks, is at the forefront of the whole problem. The formation of an international education policy discourse has been facilitated by the political empowerment of supranational organizations, by the evolution of countries into nodes of these supranational governance networks, by the institutional shrinkage of the welfare state and by the various forms of globalization. Apart from the efforts for the agreement on a common economic policy, there are, as Zmas (2007) observes, three forms of intervention of the supranational organizations, mainly of the European Union, in the educational systems of the various countries, including Greece.

The policy of convergent targeting.

Within the framework of the policy of convergent targeting, first common educational places are established for all educational systems, then common indicators and criteria for monitoring the progress of each country in achieving the above objectives and as a culmination specific timetables for the implementation of the required programs. The greatest example of this kind of intervention by supranational organizations is the Treaty of Lisbon. In March 2000, the Lisbon Council recognized the important role of education as an integral part of economic and social policies, as a means of strengthening Europe's global competitiveness and as a guarantee of ensuring the cohesion of societies and the full personal integration of citizens.

Given the differences between European countries in terms of priority and resources devoted to this area, as early as the beginning of the decade 2000-2010 the European Union (then still the European Community) sought to harmonize the rules governing lifelong learning and education in the Member States, and make it a high priority in order to achieve high competitiveness in the Common Market. He took over the responsibility of "coordination" and "complementary action" next to that of the Member States (Perakis, 2012).

In the context of the central role of the apprentice, equal opportunities, and the adequacy of education and training opportunities, the pursuit by the Member States of these interventions is imperative. It required the development of partnerships between the educational services provided, the implementation of specific timetables for the achievement of the objectives set under the Union guideline, the implementation of evaluation procedures through quantitative and qualitative indicators. For the first time, the European Council refers in detail to education and training, identifying specific measures, while authorizing the Education Council to formulate common future goals for education and training systems, thus giving perspective to the whole project. This is undoubtedly the most important decision, at the highest level, in the history of the EU for education (Siakaris, 2006). Characteristically, we observe that at the level of primary and secondary education, the new national curricula promote interculturalism and the development of key skills, so that potential new employees can cope with the needs of the global market. The gradual disengagement from the state financial support and the formation of financially independent school units is promoted, while with the introduction of the information systems a more complete control is achieved, which is then a basic criterion of the promoted evaluation.. At the level of higher education, the "mobility" of teaching staff, researchers and students in Europe is significantly enhanced. The implementation of a teaching project evaluation system is being implemented gradually, through widely accepted indicators, on the basis of a common system of easily identifiable and comparable degrees.

The policy of ranking tables

The policy of ranking tables is expressed by the collection of statistics for the various education systems, the periodic publication of these data and the hierarchical ranking of the education systems

after the publication and processing of the measurements. In recent years, the OECD's activity has intensified both with the valid collection and processing of the necessary statistical indicators and the ranking of educational events in each country, as well as with the formulation of recommendations to members and partner countries (Henry et al., 2001). Some of its best-known publications include reviews of its members' education systems, comparative quantitative surveys of the Education at a Glance series, periodic educational policy analyzes, and most recently the now-well-known PISA research program on student performance and of the educational institutions of its member countries (OECD, 2003).

The participation of countries in the PISA program is optional on the basis of an "agreed" framework. However, as long as participation decisions are made at a high governmental level, without asking those who will participate as a "sample", PISA becomes mandatory. In fact, more and more countries want to participate in these evaluation systems so as not to be excluded from developments and the expected benefits of transnational cooperation. Such measurements, however, as Zmas (2007) observe, also cause some concerns or negative consequences: the classification of training systems through such control systems is reminiscent of unfair competition of sports teams as in a training league with the prevailing logic of winners and losers. There is also the risk of an unbridled educational lending in the effort to coexist with worthy and innovative educational systems or often the logic of useful learning rather than true education is strengthened.

Both by publishing comparative data and by providing direct recommendations, the OECD has a significant impact on shaping an international education reform (Moutsios, 2002). The acquired PISA displays a peculiar imperialist penetration into the educational affairs of many countries. His proposals within the framework of neoliberal ideology, focus on the intensification of policies for the acquisition of new skills by students, the wider use of information and technology in teaching, the best combination of educational and work experience, the strengthening of ties between higher education institutions and the labor market, decentralization in decision-making and evaluation, issues not at all unknown and in the reform agenda of the European Union. PISA, as a supranational "inspector", exercises control over the content of the compulsory school. Its results become the basis for the reform of school textbooks and curricula, with the aim of redefining the relationship between education and the labor market. Thus, in Greece, almost all new textbooks in mathematics and physics were formed in the logic of cultivating abilities-skills, in accordance with the requirements of the modern Knowledge Society.

The policy of gold bridles

The policy of golden bridles is expressed by generous funding in weak or developing countries with the aim of improving and upgrading their education systems, but in return for indirect pressure to adopt specific directions and reforms that will serve the interests of the of powerful states. Examples of the implementation of the golden bridle policy in the educational events of Greece can be mentioned the funds for the implementation and evaluation of the Innovative Programs which aimed at exploratory-collaborative learning and the development of skills and the cultivation of positive attitudes and behaviors of students (Spyropoulou et al., 2008). Characteristically, Environmental Education was the first Innovative Interdisciplinary Program in Greece based on the international proposals of the U.N.E.S.C.O. The institutionalization of Environmental Education in Greece as an educational proposal emerged after the commitment of the Ministers of Education of the member states of the European Union (EU) for the development of action and the promotion of Environmental Education at school (Spyropoulou Mr. d., 2008). Likewise the Health Education program was the second innovative program which since the early 1990s has been in the focus of attention of International Organizations, such as the World Health Organization and the Council of Europe, and was considered the most appropriate instrument for health promotion, with the concept of preventing and improving human health.

The EU seems to treat control practices with main focus on program funding and the Open Method of Coordination in order to ensure and control the convergence of all educational policies produced to the goals pursued by the Lisbon Strategy. This funding is not based on purely scientific interest, but is an indirect effort of the European Commission to intervene and influence what is happening in European education through the Bologna Process (Stamelos & Vassilopoulos, 2004). More specifically, these funding through international organizations, require the observance of certain conditions associated with the mandatory adoption of certain ideas and policies (Lewin et al, 1982). All this indeed improves the situation and solves educational pathogens and dysfunctions, but at the same time other issues arise

with the most important being the misuse of the money provided and their improper utilization or exploitation by some experts, a phenomenon that is not only Greek.

Possibilities of convergence of national education systems

It is therefore an indisputable fact that the international organizations and the European Union in the general context of globalization are increasingly influencing the formation of the national educational discourse and the educational issues of Greece, but also of all the countries that make it up. These interventions, dictated by the dominant political, economic philosophy and not so much by the existing educational and social needs (Bouzakis, 2002), gradually lead to a partial gradual convergence of national educational policies.

Any international interventions and decisions do not necessarily and legally lead to the convergence of all individual education systems. According to Zma (2007), there is little evidence of substantial, linear convergence of individual national education systems. The differences between them remain significant despite the common challenges they face. Although nation-states have lost the power of the past to pursue independent education policies, they continue to interpret and apply internationally-directed guidelines and incentives differently. The increasingly intervention of the European Union, has not undermined the Member States' process of bearing the brunt of the various educational issues; The exercise of national education policy is undoubtedly within the jurisdiction of countries, although it has long since ceased to be established in isolated environments. A key role is played by the unique way in which each state handles and absorbs the international discourse of educational policy and integrates it into the pre-existing organization and practices at the national level.

The difficult, ambitious and open in the design and outcome of the project of convergence of national education systems under the influence of supranational organizations is natural to raise serious issues of effectiveness (Matthew, 2007). According to Zma (2007), the weakening of the national educational policy and the "tendencies" projected in a legislative manner do not prejudge the absolute convergence of the national systems. He states that significant differences are observed at national and local level in the implementation of key tasks, which are included in the training agendas of supranational organizations.

The common component of educational reforms and innovations, despite the declared desire for convergence of some national education systems, such as the Greek one, with those of other European countries, fails to oppose basic weaknesses and shortcomings of their centralized, bureaucratic and cognitive centers. Due to the size and number of their structures, they are characterized as complex and strictly hierarchically structured. The top is characterized by a large concentration of responsibilities, while at the base there are exclusively executive responsibilities and little power only for the Director of Schools (Andreou & Papakonstantinou, 1994), which conflicts with the main goal of modern European and world education policy for greater decentralization and delegation of administrative responsibilities at regional level. In many countries, including our country, as Saitis (2004) points out, while the main goal of the establishment of the Regional Directorate was to remove the administration from the excessive concentration of power at the top of the pyramid, eventually in practice the same power was shifted in the Region.

Also, the educational systems of the countries both in Europe and in the wider world, were initially oriented towards the formation and strengthening of the national identity. Today they are called to give content and substance to the European and by extension to the Global citizen. They are called to mitigate historical controversies, to respect but also to limit to the absolutely necessary level the national peculiarities, to focus on the points of ideological and socio-political convergence, to discover and if necessary, to invent the common cultural heritage (Matthew, 2007). The success of this project in their Member States supranational organizations where social, political and cultural diversity is heightened, it becomes difficult. Due to the failures of liberalism, as expressed by the policy of supranational organizations, to incorporate a genuine respect for cultural heterogeneity and to recognize the importance of collective solidarity and community morality, the desired convergence of national curricula nationalism. Thus, patriotism as a sense of collective morality that ensures legitimacy and privileges for thanks to the common good, it gives way to nationalist belonging that is hardly set aside by the educational policies of liberalism (Zempylas, 2011).

In the European Union and in other world organizations, while the mandates should be the states and the representatives should be the supranational institutions, nowadays the roles are reversed. Successful

convergence of national education systems requires strong states, strong national cultures, strong societies, strong national institutions and rational participation in the institutions based on explicitly stated national interests. However, the evolution of these organizations has resulted in some states being living members and creators of the European, global and other states being paralyzed states whose contribution and benefits to the European integration process are zeroed out due to their own state system malfunctions. . The strongest (political and economic) nodes have a stronger reason and therefore the power to make the goals of the whole network (Moutsios, 2007). Thus, the time-consuming convergence of many becomes imperative countries, where states promote their cooperation, without being slowed down by those that are slow.

At the supranational level, there are regulatory structures that mainly concern consumer issues, but there are no ethical-regulatory structures that shape man morally and philosophically (Hephaestus, 2011). Only the Member States and their institutions are endowed with such structures, so education will inevitably remain a matter for national societies and their institutions for a long time to come.

While most citizens of the member states of supranational organizations are more cosmopolitan than ever, they are also phobic, so less receptive to the cultures of others, especially when they do not go to "meet" them, but are transported to their own place (Hephaestus, 2011). In fact, it seems that the more we come in contact with otherness, the more negative we become towards it, if we are not prepared for it morally, emotionally and mentally, in other words prepared by the bodies that exert educational influence (Papastefanou, 2009). With these data, education can not respond essentially to the challenges of globalization, if it fails to combine ethnocentric politics with the principles of intercultural education. Cosmopolitanism as an attitude of each other towards the Other, either as a simple coexistence, or as personal communication and cooperation, can not be a solution. On the contrary, systematic educational planning can contribute drastically to reducing the hated structural position of the "foreigner" and to successfully dealing with the problem of human "otherness"(Scarry, 1999).

CONCLUSIONS

The harmonization of international actions and the development of reciprocal contacts have necessitated the establishment of control and coordination bodies, which set a transnational agenda for educational issues and develop performance indicators that facilitate international comparisons. The intervention of supranational organizations in the educational issues of Greece and all the countries that make up the European Union, is an indisputable reality. The formation of an international educational policy discourse has been facilitated by the political empowerment of supranational organizations and from the simultaneous evolution of countries into nodes of these supranational governance networks. Nevertheless, the systematic formulation of a common educational policy can not undo the individual differences and level the peculiarities of each state entity, nor does it seem capable of bringing in complete identification and harmonization all the Member States of the various supranational organizations.

The school principal, especially in secondary education, has increased responsibilities and his role is very important in the efficiency of the school unit (Saitis, 2007). According to the new perceptions, he is called not to command, but to lead the school unit. The terms leadership and management are not the same. Leadership refers mainly to the leader's ability to direct the processes, while the administration to the execution of the procedures (Chytiris, 1996).

According to the holistic model of Pashiardis and Brauckmann (2011), leadership is treated as a multilevel concept that can affect school and student variables, but is also likely to be influenced by contextual variables at the same time in which the leader acts (Pashiardis, 2012). The theoretical framework of this consists of the pedagogical style, the structural, the participatory, the business and that of the staff development. The results of the research of Pashiardis and Brauckmann (2011), show the need to apply more than one leadership style by the principal of a school unit. Due to the diversity of the school level to which the leadership model focuses, no style is universally effective. Leadership is a complex mixture of the five aforementioned leadership styles, while the amount of style components is not unambiguously defined, but varies depending on the particular characteristics of the school context that is called to be implemented (Pashiardis, 2012).

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EDUCATION PRACTICES

KNOWLEDGE MANAGEMENT AND KNOWLEDGE SHARING IN SECONDARY SCHOOL TEACHERS

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ABSTRACT

This study aimed to examine the ways of knowledge management that secondary school teachers use and the necessity of knowledge sharing to the educational procedure. The participants of this study were 149 secondary school teachers working in West Thessaloniki, who completed a questionnaire about the way teachers manage knowledge, the incentives and the tools that teachers use to create and share knowledge and the obstacles that hold back knowledge sharing in the educational community. The results showed the importance of new technologies and of storage knowledge as well as the significant interest of teachers for knowledge sharing.

Key Words: Knowledge Management, Knowledge Sharing, Innovation in Education, Digital Repository, Education.

PURPOSE

Knowledge management and Knowledge sharing are key factors in the development of skills associated with creativity, innovation and problem solving, and they are considered necessary in education (Syed, Murray, Hislop, & Mouzoughi, 2018).

Nonaka and Takeuchi (1995) considered as very important the distinction between tacit and explicit knowledge, "mind knowledge" and "body knowledge", and they made it widely known in the field of knowledge management. Explicit knowledge is expressed, either in words or in numbers, and can be shared. This sharing can be realized in many ways, such as files, data, plans, programs (Nonaka & Takeuchi, 1995). Tacit knowledge, on the other side, refers to the knowledge stored in the individual's brain and includes his beliefs, views and value systems (Uriarte, 2008).

According to Uriarte (2008), knowledge management is the conversion of tacit knowledge into explicit knowledge and its sharing within an organization. Through this process, organizations create value from their one intellectual capital, which is nothing more than knowledge. This transformation leads to the creation of knowledge at different levels, such as inter-organizational, organizational, cooperative and individual levels (Novakovic, 2020). According to Hislop, Bosua and Helms (2018), the exchange of knowledge and its results for the organization, determines the success of the knowledge management policy that the organization implements.

In the field of education, the school is also considered an organization, with the ultimate goal of learning. But the same applies to teachers, for whom we can say that they belong to an educational learning community (Αργυρού, 2011). The basic elements of knowledge management can therefore be observed in these fields as well. When teachers and leadership work continuously for learning and sharing, they create a vocational learning community, in which they cooperate, they cogitate and evaluate their practices. The ultimate goal of this effort is improving teaching and learning (Κούκου, 2018).

Knowledge sharing is considered one of the most fundamental activities in an organization, and this is why research especially from 2010 onwards has focused on it and its various effects (Ahmad & Karim, 2019). According Van Den Brink (2001) there are three factors that contribute knowledge sharing: individuals, organization and technology. Knowledge cannot be shared without social interaction

between individuals. The role of organizations is also very important, as a place of implementation of sharing. Technology also facilitates knowledge sharing, into a world of information and communication.

The process of knowledge sharing ultimately proves to be very demanding and there are multiple factors that can affect it. According to a study by Nadason, Saad and Ahmi, (2017), there are four categories of sharing inhibitors, concerning individuals, culture, technology and organization itself. Another factor found in many studies that prevents individuals from enjoying the benefits of knowledge sharing is leadership, when is hostile and not at all supportive of employees (Ahmad & Karim, 2019). It has been also found that the genus factor can affect knowledge sharing (Tariq, 2018). Knowledge sharing has a positive effect to individual as it contributes to improving his performance and it helps him to make decisions and deal with problems. At the organizational level sharing affects efficiency and leads to innovation (Ahmad & Karim, 2019). The term of innovation, from the 90's, refers not only to the field of economy but also to the field of education, in the sense of creativity (Θεοδωρόπουλος, 2019). The existence of a culture of knowledge sharing increases innovation and improves educational performance (Al-Husseini & Elbeltagi, 2018).

Education is a fertile ground for the promotion of innovation. However, traditional teaching, takes the student away from the concept of self-action and creativity (Hargreaves, 2003). Innovative practices and innovative programs take various forms in education and contribute significantly to shaping the culture and tradition of each school. The dissemination of these effective practices is considered very important for knowledge sharing. One way to achieve this is to create repositories of good practices but also with workshops, publications, events and more generally using the internet (Κυριακώδη & Τζιμογιάννης, 2015). According to Κολεζά (2014), the main goal of knowledge management in learning organizations is to improve their practices, decisions and their performance. The role of new technologies and the use of digital repositories are crucial for achieving this goal.

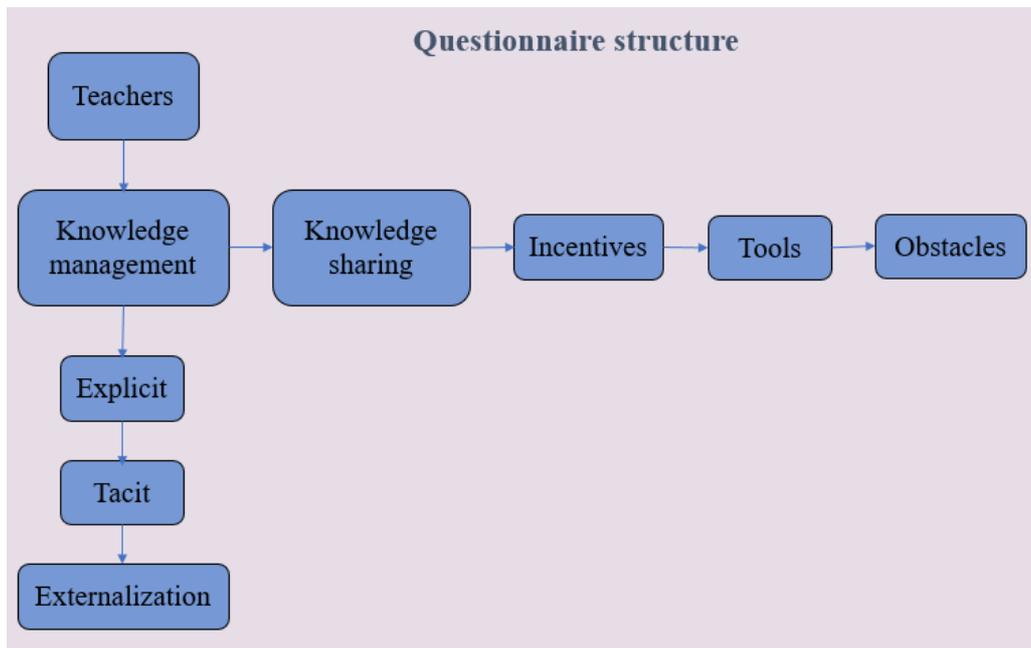
This study aims to examine the ways of knowledge management that secondary school teachers use and the necessity of knowledge sharing to the educational procedure. The individual research questions are "In what ways do teachers manage knowledge?", "What are the incentives for teachers to share knowledge?", "What tools do teachers use to create and share knowledge in Education?", "What are the obstacles that hold back knowledge management and knowledge sharing in the educational community? ». Knowledge management and knowledge sharing can enhance innovation, which in educational practice is implemented through innovative educational programs. The effects of these programs can be diffused by using technology, while a useful tool to accomplish that, is the digital repositories of good practices. This study aims to examine the ways of knowledge management that secondary school teachers use and the necessity of knowledge sharing to the educational procedure.

RESEARCH METHODS

The method that was considered suitable for data collection is quantitative. According to Brannen (2017), in the quantitative method the researcher makes some assumptions before collecting the data and then isolates the variables through which he will make the analysis. The tool that is widely used for the collection of research data is the questionnaire, which can be used without the presence of the researcher. The questionnaire provides structured, often numerical data and can lead to their relatively simple analysis (Cohen, Manion & Morrison, 2017).

Therefore, the present quantitative survey has been carried out through the questionnaire. As a template for this questionnaire has been used a questionnaire that developed using the Delphi method in a research on knowledge management in the field of Health (Αδαμοπούλου, 2019). It consists of a total of 63 closed-ended questions, with answers given on a Likert scale from "I totally disagree" to "I totally agree". The questionnaire was divided into four (4) parts. The first part includes 12 questions that explore the ways that teachers manage knowledge. The second part consists of 19 questions about the incentives for knowledge sharing. The third part includes 16 questions relative with the tools used for knowledge sharing. The fourth part consists of 16 questions relative with the obstacles to knowledge management and knowledge sharing in the educational community (Figure 1).

Figure 1
Questionnaire structure



The research sample was defined through selective sampling (Παπαναστασίου & Παπαναστασίου, 2014) and consisted of one hundred and forty-nine (149) secondary school teachers working in west Thessaloniki.

The data was collected over a period of about a month with a questionnaire created through the free online platform "Google Forms". This platform allows the quick and easy creation of questionnaires, as well as their immediate distribution via e-mail and social media. In this way the process of completing and collecting the questionnaires is achieved, while there is the possibility of immediate export of the results to a spreadsheet of MS Excel. The anonymous questionnaire was distributed via e-mail and social media to Secondary school teachers. The collected data was exported and saved in a Microsoft Excel workbook. Statistical analysis was performed using the IBM SPSS statistical software package and the significance level was set at 0.05.

RESULTS

Reliability of the Questionnaire

Reliability was assessed using internal consistency determined by Cronbach's alpha. The value of the coefficient is greater than 0.7 in each unit / variable and is very satisfactory (Table 1). Therefore, the Individual metrics (Items) used to identify the variables under investigation are reliable.

Table 1
Cronbach' alpha – number of items

Section / Variable	Cronbach's alpha	Number of items
Knowledge management	0,842	12
Incentives for knowledge sharing	0,921	19
Tools for knowledge sharing	0,935	16
Obstacles of knowledge sharing	0,907	16

Demographics of participants

149 people participated in the research, of which 92 were women and 57 men. 55.7% of the participants are over 50 years old, 43% are aged 36 to 49 years and only 1.3% are under 35 years old.

67.8% of the participants serve in General Education while 32, 2% in Vocational Education. In addition, 55% of the participants work in a school located in an urban area, 36.9% of the respondents have a school located in a semi-urban area while only 8.1% work in a school located in a rural area. More than half of the participants (53%) hold only the basic degree, 34.9% hold a Master's Degree, 6% hold a Doctorate and 6% have a second degree. In addition, 24.2% of the participants have continued their education and received A 'level training in Information and Communication Technologies, 54.4% have AD and BD level training, 8.7% have some other training while 12.8% of the participants do not have any training. Most of the teachers / participants are Philologists. Mathematicians, Mechanical Engineers and IT teachers follow in large numbers.

A) Knowledge management

In the subcategory of knowledge obtainment and use, the highest average is the proposition that teachers' knowledge comes from material stored in either printed or electronic form (3.95 / 5). The proposals concerning the origin of knowledge from printed material (3.77 / 5) and from material that has been posted on internet educational sites (3.65 / 5) also show a high average. Regarding the subcategory of willingness to contribute, it is observed that the teachers who answered the questionnaires are very willing to guide and advise their colleagues on work-related issues whenever requested (average 4.26 / 5). Also, the suggestion that teachers are willing to publish or send material from their personal file whenever requested (3.79 / 5) holds a high average. The highest score in the subcategory of knowledge sharing has the proposal regarding the transfer of knowledge using electronic media (3.67 / 5), but with a small difference follow the proposals for the transfer of knowledge using printed material and oral speech.

B) Incentives for knowledge sharing

The proposal with the highest average of the 19 proposals concerns the existence of a peer-to-peer and non-competitive climate (4.26 / 5). Also followed with a high average are the proposals regarding the satisfaction of internal incentives (4.06 / 5), the provision of logistics infrastructure and the use of new technologies (4.03 / 5), as well as the adequate and timely information on education and training programs (4.03 / 5). A lower average among the proposals that motivate employees is the proposal to recognize and encourage the effort of those who share their knowledge (3.65 / 5). The last average is not low but is lower among the other 19 proposals.

C) Tools for knowledge sharing

The highest average of the proposals is the support with appropriate technological equipment and learning tools (4.38 / 5). Access to internet, email, digital training platforms (eg e-me training platform) also has a high average of 4.28 / 5. The following are suggestions for developing relationships of cooperation, mutual aid and desire for improvement, providing time for training and opportunities for all teachers to be constantly updated, modernized and shared their knowledge (averages 4.18, 4.16, and 4.15 respectively).

D) Obstacles of knowledge sharing

Of the obstacles mentioned, the biggest average is the lack of technological means and equipment (4.15 / 5). The lack of incentives (4.09 / 5) follows as a significant obstacle with a large average and follows the lack of time (4.04 / 5). It is obvious that gender biases are not considered a major obstacle as the average of this proposal is 2.54 / 5 and is the lowest.

Comparative Analysis of Results

A) Non-parametric control of Kruskal Wallis average IQ values in terms of ICT training.
Differential in the ways of knowledge management

At this point, it is examined whether there is a difference in the participants' answers based on the type of training they have in ICT (if any). After a regularity test it results that the sample does not follow a Normal Distribution and for this reason we will use the non-parametric Kruskal-Wallis test for independent samples. This test examines whether there is a difference in the mean values of the answers for the 4 groups of participants based on the type of training (level A training, A and B, other, no training). As shown in Table 6.8, it is observed that the resulting p-values are greater than 0.05 and therefore there are no differences between the answers given by the participants in the category of knowledge management depending on their ICT training.

Differentiation of incentives

Regarding the control of whether there are differences in the answers of the participating teachers to the proposals that refer to the incentives of knowledge sharing, the following table is given (table 6.9) with the p-values. It is observed that all values are greater than 0.05 so the null hypothesis of equality of the mean values is accepted and therefore there are no statistically significant differences in the answers based on the training of the participants.

Differentiation of tools

2 propositions emerge with p-value values less than 0.05 (propositions 20 and 25). Therefore, the null hypothesis of average price equality is rejected and there is a difference in the answers to sentences 20 and 25 depending on the type of training.

Differentiation of obstacles

Proposal 50 has a p-value of less than 0.05 which means that the null hypothesis of average price equation is rejected and therefore there is a statistically significant difference in the answers of the participants in this proposal depending on whether they have ICT training and what training they have.

B) Test of Independence χ^2

The χ^2 independence test is applied to examine the correlation between two quality variables in the sense of the independence between the rows and columns of the dual input (or correlation) table of the two variables. The null hypothesis is that the two variables are not correlated versus the alternative that they are correlated.

Initially, the research is interesting for the existence of correlations between the gender of the participants and their answers to the extent that they agree with the 63 proposals of the questionnaire. The tests for the existence of correlations between the sexes are presented as an indication and only 4 propositions for which a p-value of less than 0.05 results and therefore there is a correlation between these variables. For the remaining 59 propositions either a p-value greater than 0.05 is obtained, as a result of which the hypothesis of the independence of the variables is accepted or the Cochran constraint is not satisfied, so the independence check is not performed.

In order to examine the case that there is a correlation between the gender of the participants and the degree to which they agree that competition is an obstacle that makes it difficult to share knowledge in the educational community, an independence test is carried out. The observed significance level is 0.014, less than 0.05, so the null hypothesis of independence is rejected and the variables gender and degree of agreement that competition is an obstacle to knowledge sharing are correlated.

With the χ^2 independence test for the variables gender and fear of weakening as an obstacle for the sharing of knowledge in the teachers, there is an observed level of importance of 0.009, a value less than 0.05. Therefore, the null hypothesis of the independence of the variables is rejected and it is concluded that there is a statistically significant relationship between the variables gender and degree of agreement that the fear of weakening is an obstacle.

Carrying out an χ^2 independence test for the variables gender and fear of error / fear of exposure as an obstacle to knowledge sharing results in an observed significance level of 0, less than 0.05. For this reason, it is concluded that the null hypothesis of the independence of the variables is rejected and therefore there is a statistically significant correlation between the variables gender and degree of agreement that the fear of error / fear of exposure is an obstacle to knowledge sharing in the educational community.

From the χ^2 test for the independence of the variables gender and degree of agreement that gender bias is an obstacle to the sharing of knowledge in the educational community, an observed level of significance of 0.001, less than 0.05, results. Because of this value, the null hypothesis of independence is rejected and therefore there is a relationship between the variables gender and degree of agreement that gender bias is an obstacle to knowledge sharing.

C) Non-parametric Wilcoxon Rank Sum Test: the results of the research in comparison with gender. Differential in the ways of knowledge management

Below it is examined whether there is a difference in the answers of the participants regarding the next sentences / variables of the section "ways in which teachers manage knowledge" depending on their gender. A regularity test shows that the sample of participants does not follow a Normal Distribution

and for this reason the non-parametric Wilcoxon Rank-Sum test is used. This test has as null hypothesis $H_0: \mu_1 = \mu_2$ with alternative $H_1: \mu_1 \neq \mu_2$, and it compares the average value of the answers given by women in each sentence with the corresponding mean values of the answers of men. The value p value is calculated each time and compared with the value 0.05 which is the significance level.

The test indicates that the equation of mean values is rejected for p-value less than 0.05 and cannot be rejected when p-value is greater than 0.05. From the above table it can be seen that the proposals "I inform my colleagues about work and educational issues" and "I transfer knowledge using documents and printed material" have a p-value less than 0.05. Therefore, the null hypothesis of equal average prices is rejected and there is a difference between the answers of women and men to these questions. For the remaining 10 sentences there is a p-value greater than 0.05 and there is no difference in the answers between the two sexes.

Differentiation of incentives

In 4 of the 19 proposals for knowledge sharing incentives, a p-value of less than 0.05 is obtained and the hypothesis of average value equality is rejected. As a consequence, there is a statistically significant variation of the gender-based averages for the incentive proposals "By granting a work permit for participation in seminars", "When sufficient knowledge is ensured", "By educating teachers about the benefit of enriching their knowledge "and" With the satisfaction of internal incentives, such as job satisfaction ". It is obvious that in these proposals where there is a difference in average prices, women have a higher average of answers than men.

Differentiation of tools

Only in 2 of the 16 proposals is there a statistically significant difference in the mean values between women and men, which are "Making time for training" and "Developing bonds of cooperation, mutual aid and desire for improvement" because they have a lower p-value of 0.05.

Differentiation of obstacles

It is obvious that we cannot argue that the two averages differ in terms of the sentences "lack of time", "lack of incentives", "resistance to change and lack of similar culture", "lack of a specific training program by those who have the knowledge and practice address ", and" The well-established notion that every teacher's knowledge is his property "because they have a p-value greater than 0.05.

For variables with a p-value less than 0.05, the null hypothesis of the test is rejected and the means are differentiated by gender. In fact, for these variables it is observed that women have a higher average than men. These are "The lack of technological means and equipment", "The competition between teachers", "Problems in the work environment», "Malfunctions in the service due to improper organization and management of staff", "Teachers' resistance to new knowledge and its sharing, for fear that they will take over a greater workload", "The fear of exposure and the fear of error".

Analysis of correlations between variables: Spearman's Rank correlation coefficient

Linear correlations between the variables are either patients with values ranging between 0.1 and 0.4, or moderate with values from 0.4 to 0.6. Exception is the strong linear correlation with a value of 0.727 that exists between the variables "Support with appropriate technological equipment and learning tools" and "Internet access, e-mail, digital educational platforms (the e-me educational platform)" Concerning the means that motivate teachers to share knowledge.

In the Spearman index values for the variables related to the good relations between colleagues and the climate of cooperation between them is observed to contain light and moderate correlations with the higher of these being the value 0.654 between the variables "I am willing to publish or send material from my personal file whenever I am asked "and " I am willing to advise or guide a colleague on work-related matters whenever I am asked".

IMPLICATIONS

Conclusions and suggestions

Teachers use educational material that they have stored either in printed or electronic form. Noteworthy is their willingness to share this material with their colleagues and to advise them on labor and educational issues. This conclusion confirms the view that the key element in the knowledge management process is the willingness shown by the participants to share (Καποτά, 2017).

Furthermore, teachers as mentioned are significantly motivated to participate in knowledge sharing by having a peer rather than competitive climate between them. This conclusion confirms similar findings regarding the important role of an organization's culture and leadership in sharing (Van Den Brink, 2003).

The provision of logistics infrastructure as well as the use of new technologies, information systems and digital repositories is considered by teachers to be crucial for knowledge sharing. In addition, the main obstacles mentioned by the teachers are the lack of technological means and equipment, the lack of incentives and the lack of time.

ICT teacher training does not affect the way they manage their knowledge or the incentives they have for sharing it, but it reduces the fear of exposure and the fear of error. In terms of gender, female teachers see competition between teachers, the fear of weakening but also the fear of error and exposure as a greater obstacle to knowledge sharing than male teachers. Finally, gender bias is considered as an element that can prevent the sharing of knowledge mainly by women teachers.

In conclusion, the present study showed the positive attitude of teachers towards knowledge sharing in the educational community, which is not so much related to external, utilitarian incentives, but to internal incentives, such as creativity and satisfaction. It is very important for the leadership of education to formulate a policy that will favor and support the sharing of knowledge among teachers, taking advantage of this positive dynamic. This policy may include teachers training, the provision of logistics infrastructure and the implementation of innovative actions, such as digital repositories. This research highlighted the implications of knowledge sharing in the educational community at the individual, group and organizational level. At an individual level it can help improve efficiency and creativity, enhancing life satisfaction and reducing work stress (Ahmad & Karim, 2019). At a team level it can develop creativity, collaboration and acceptance of otherness (Ahmad & Karim, 2019). Finally, at an organizational level it can improve the quality and pace of learning and lead to the development of innovation (Ahmad & Karim, 2019).

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PRACTICE OF INTRODUCING DEMOCRACY IN THE CLASSROOM

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ABSTRACT

Lesson practice by children themselves, applied, for many years. Children's desire to have a say in everything that happens in classroom leads to circular placement of desks. Each child, thus having a complete picture of action of others, can be a regulator of learning becoming. Course is a single discussion platform, with its topic pre-processed from previous one. Evaluation of everything, which concerns everything, is everyone's work. In resulting average, teacher, who is no more than moderator of course, can have room for modification of only 3 points + -. Learning outcomes (from judgment of others, for children) are wonderful.

Key Words: classroom, student-centeredness, teamwork, creation, self-assessment.

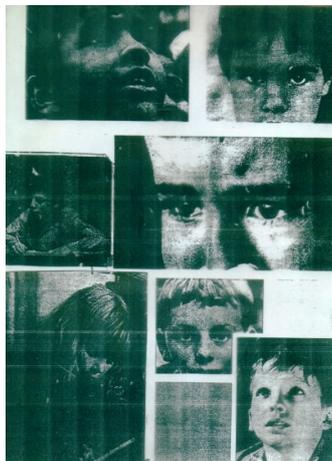
THE PRACTICE

PURPOSE

In a democracy, everyone has a say in everything, in their society, the future of which they determine themselves, after group discussion and codecision, with their representative simply coordinating their actions. It seems utopian, but it is not. Of course, we are not the ones who will reshape the world, which is not only democratic, but we will show that it could be, if we wanted to, by showing it and demanding it, as a society, from the whole. This is what we tried, first and so far, alone, to apply, proportionally, in an eminently (any and all of which democracy is only superficial and, therefore, false) authoritarian formation, in the classroom.

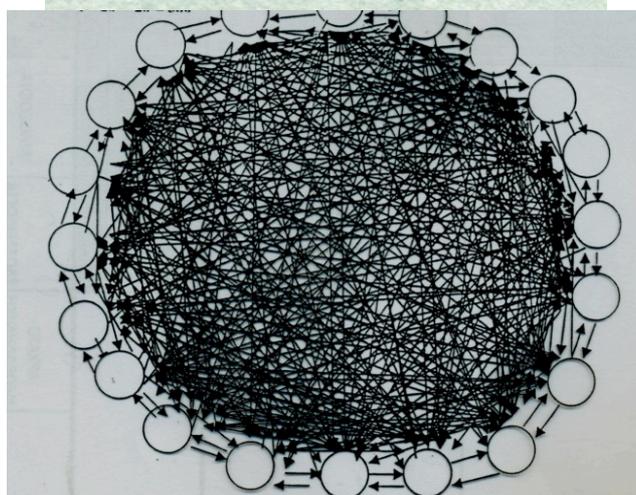
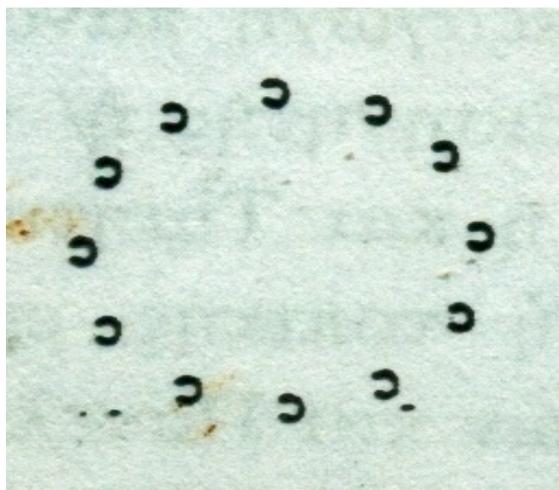
RESEARCH METHODS

κλιμα: Β/2		Ανδριανός Βασιλάνης	Φωκιάς Σταύρος	Νοτιάς Φάνης
Νασιά Κυριάκος	Καρέρια Παναγιώτης	Θωμάς Κωστάκης	Νημάκης Νεώφυτος	
		Βέρα Καλλιόπη	Πωλίνα Καλλιόπη	Νεομάρκος Χρήστος
Νασιά Κυριάκος	Χριστοδωμίτσης Χρήστος	Νοτιάς Βασιλάνης	Παναγιώτης Κωστάκης	Μιλτιάδης Ανδριανός
Καρέρια Νικόλαος	Καλλιόπη Νικόλαος	Κωστάκης Νασιά	Ανδριανός Νασιά	Ελευθέριος Λίβας
				Ζεφύρος
				εόρα



1. The classroom in frontal system
2. The climate, until then, in the classroom

The class was beginning, as it were, frontally (Adams & Engelmann, 1996), discovering (McCaslin, & Good, 1996, Makri - Botsari, 2006), along the way, that it could have no reason for each child's action, which was, in fact, individual or subgroups' (Meyer, 1977; Kapsalis, 1983; Anderson et al, 1997; Matsagouras, 2007), Subgroups instead of solving the problem (Correl, 1976; Petersen, 1979), exacerbate it, being a prelude to competitive competition (Cohen, 1986). The completely circular placement (Rokoudi, 1990) of the pupil desks



3. The classroom in circural system

4. Student interaction in the classroom

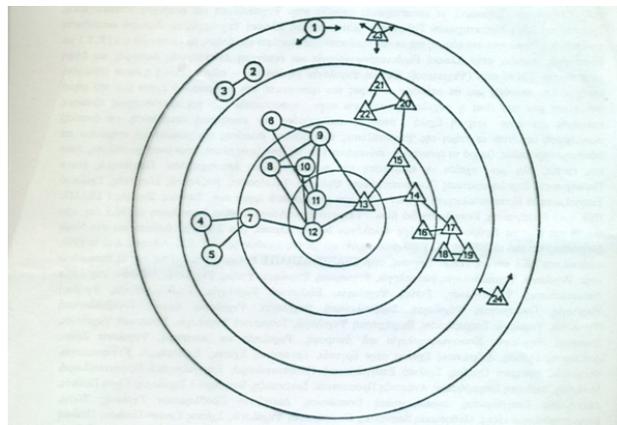
(Polemi – Todoulou, e.g.) turned the parallel individual actions into a group action, in which, now, they could, in fact, with the desks in a circle, where everyone (sitting where everyone wants) is face to face, have all the same opportunity to be co-creators (Battistich et al, 1993), in the common work (Rokoudi, 1990) of the class.

Initially, now, because only now it does make sense, a sociogram (Meyer, 1977; Kapsalis, 1983), was designed, choosing the most appropriate form, to show the children's relationships, in the department, as a game, by the children themselves or by the teacher (Volioti, 1989, Karagiozidis, 2008, Spanou & Tsea, 2008). At the end of it (Rokoudi, 1990), there was a discussion, about the operating statute of the class, and drafting and signing of it.

Immediately after (Rokoudi, 1990), elections were held for a seven-member Board of Directors of the department, from the beginning as (in order of office) Chairman, Coordinator, Secretary, Curator, Treasurer, Caretaker, replaced, in case of vacancy, resignation, resignation or desire of a member to activate procedure, which would be approved by the General Assembly, by the next elected for the specific role, in case of difficulty or in the absence of such a procedure for the nomination of a new person in this role, non-interested interested parties in this regard, or, finally (on the initiative of the President, who, in need, also served the role, until the emergence of a new person, in him), by assignment. The appointments were carried out by a three-member Election Committee, elected, by the same procedure, from the beginning, as (by official order) President, Secretary, Supervisor, on the initiative of the President. The President represented the Department to anyone (stamp with the name of the department written in a circle in the center), the Coordinator directed his actions (constantly informing the Secretary about what he was not present), the Secretary kept his books (Diary), the Curator was responsible (through a Protocol) for public relations, the Treasurer was responsible (Cash Book) for any form of financial transaction, the Clerk handled his correspondence, the Caretaker took

care (Property) of his property. The Board of Directors was the Executive Body of the Plenary, which was the Decisive Body of the Department. Each child was entitled to keep a personal diary of all events, as he saw them, in the room. At the end of the nominations (independent of the established elections of the 5-member Councils of the departments), a discussion followed, on the operating statutes of the class, and its drafting and signing.

In the completely circular placement of the desks, the seat had, in fact, been abolished. The teacher, from being the leader of the class, was transformed into a coordinator of its group, who would carry out the lesson. From the previous one, the children were informed about the lesson of the day, in order to process it. After a very brief introduction, the classroom became a vast workshop. Each child, having a complete picture of the action of others, could be a regulator of the result. The course was a single (never as part of exam and part of lecture) discussion platform. The resulting product was imprinted, in addition to the individual optional work in the (single, for all the lessons of the system) individual notebooks of the students, for what they wanted to record, in them, in competition-type evolving large books, made by the children, for each lesson, for all interests, as "Free Optional Homework". At the end of the year, the Board of Directors, with an advisor in this regard, the teacher, held the Competitions: the best book, the best participation. All entries had a chance in the Competitions. It was simply a matter of ranking. Prize: titles, books and other, awarded by the teacher, on his own expense.



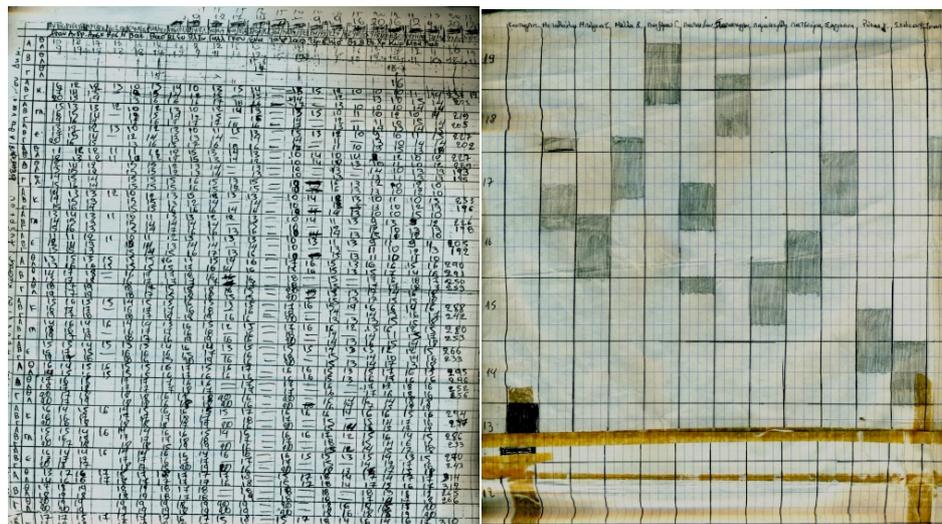
	A	B	Γ	Δ	E	Z	H
A		+	-		+		-
B	+		+				
Γ	+	+					-
Δ	+		-		+		-
E	+		-	-			-
Z		+	+				
H	+		+		-		

5. Sociogram (O=girl, Δ=boy, —= mutual choice, →=rejection) Gammage
 6. Sociogram (chooses | is selected)

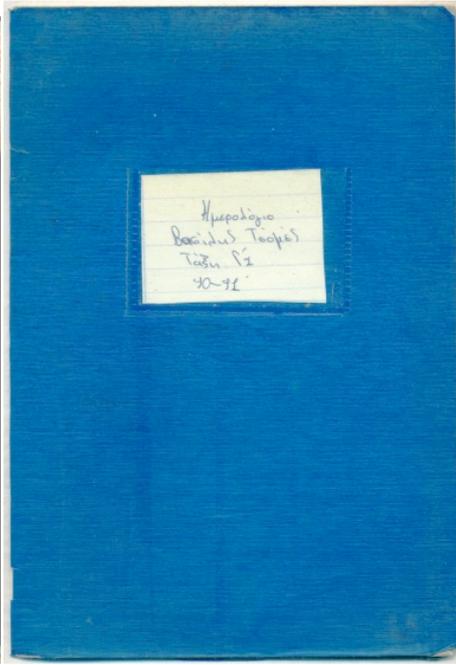
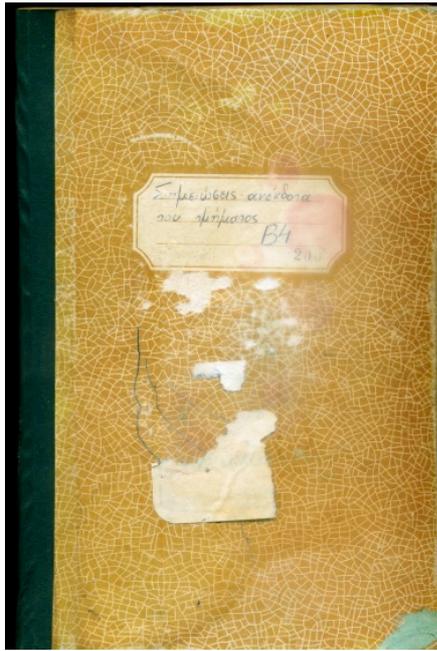
The disciplinary part was a matter of plenary. When someone was bothered by anyone or anything, they had the right to ask, if it was an urgent matter, to vote immediately, openly or secretly, the same or not for everyone, proposing a solution, for that, or for the weekend, to accounting and planning discussion of the week. The applicant's proposal, if it was a solution compatible with the data of the class operating statute, was executed immediately, if not, it was referred to the plenary debate on Friday, and a solution was given that was compatible, again, with the class operating statute. The teacher's intervention was, precisely, in its observance, always guided by change, in a behavior of respect for the class, and only, and this, at the will of the children, according to their statutes, in which the whole (and its abolition) this operation of the class was registered.

In addition to the possible (rare) extraordinary councils, the plenary session met regularly in the last quarter of our last hour, on Friday. Everything was discussed there. The issues on the agenda, whatever he wanted to discuss, were recorded by the Secretary General of the department, during the week. He chaired the Board of Directors of the department. We started with the report of our action, the week that had just leaked. The teacher's intervention was simply to comply with the Statute. At the end of the report, the Statute itself was put to the vote, which could be amended, for the next week, and even repealed and replaced. We continued with the maintenance or not of our conference system. In case (during my multi-year term, it was abolished a few times and returned, by the children themselves) its continuation, we determined, after discussion and approval vote, our next steps, for the next week. Nothing would happen next week, if it were not for the children themselves to decide. The majority should be increased, with any minority having, not only, the proper respect of the majority, but also with religious reverence to be careful and give value to any of its objections, being the opinion, the point of view and the will, of the minority absolutely respected, trying to be, always, in compromise with it.

RESULTS

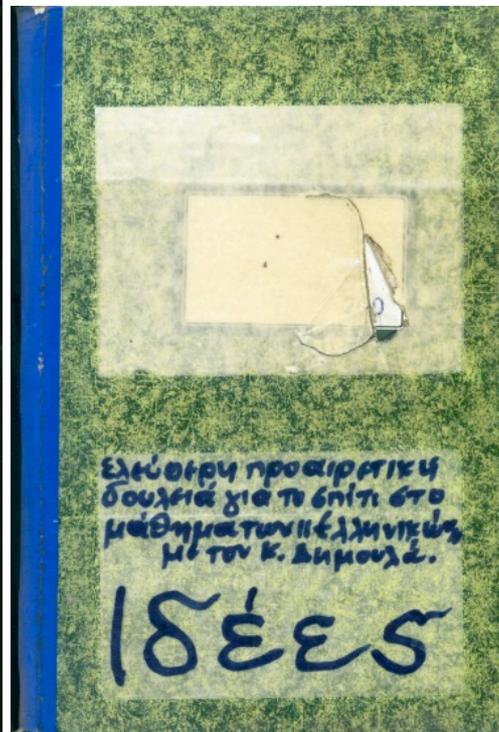
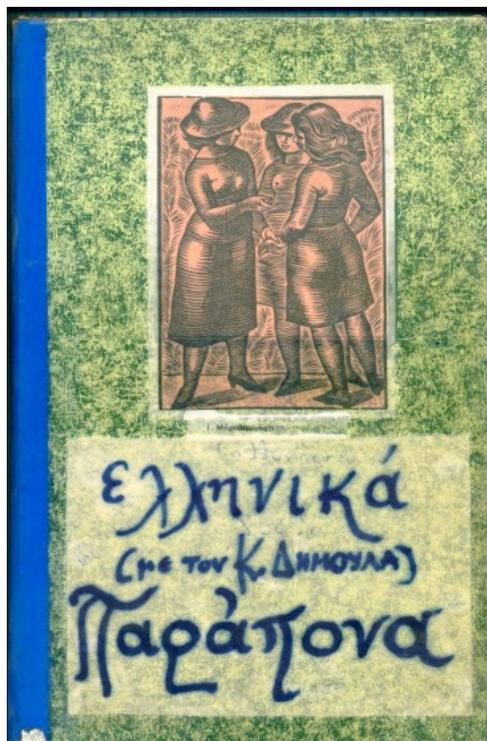


10. Cross-assessment of children's daily learning work by the children themselves
11. Self-classification of the "presence" of children in the classroom

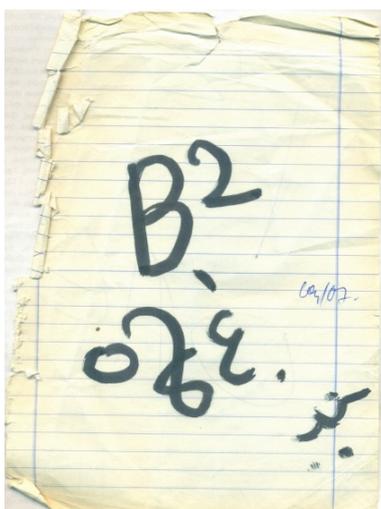


- 12. Practice Book by the (specially, for our courses, elected) Secretary of the Department
- 13. Individual Student Daily Events Calendar

Presumably, from their subsequent progress, from more or less, positive (Hadjieftymiou, 1994) in addition to their further student course and their progress, they are recorded, as such, in the form testimonies of themselves, but also of third parties, deposited in the Archive of Student Creation of our Educational Organization, but also many others testify, crosswise and multiple, to the success of our system, on social media and elsewhere.



- 14. Complaints book, for discussion and solution
- 15. Book of Ideas, for the better evolution of the System



16. Joy in the classroom

DISCUSSION ON IMPLICATIONS

The students, during the course management, from the teacher to the students themselves, learned how to learn and showed it as they progressed (our students learned to learn on their own and when, now, they would not learn, they had a teacher, with them) assuring us that it was due to our system. Clearly, this is not enough to convince us that the subsequent progress of the children was certainly due to our system, but because there is no precise correlation criterion, we are at least entitled to be satisfied that we contributed, with our system, to their progress. However, opinions, not of the children themselves, but of third parties, assure us of this contribution. This seems to confirm the relevant work. As the teacher passes the lesson to the students themselves, the students learn to learn on their own even when they are no longer with them (Makri - Botsari, 2006). In a lesson that starts frontally, the desire of the children to have a speech in the frontal system, de facto, about what is happening in the classroom, necessarily leads to the circular placement of the desks. The seat has been removed. The teacher, who is dominated the class, transforms into a coordinator of her group (Rokoudi, 1990). Each child, having a complete picture of the action of others (see, Polemi – Todoulou, e.g.), can be the regulator, with the individual self-action, in general, of the learning result, exploratory, of the result. So children are addicted to learning how to learn on their own (and later, when they do not have a teacher next to them) (Rokoudi, 1990).

The evaluation (this intersection of self-esteem concerned the whole (daily) presence of the child and the teacher, that is, descriptive, simultaneous, exactly to a degree) in our system, everything is done rightly. The evaluation sheets (secret, codes known only to the teacher) were collected at the end of each week and, for each child and teacher, the grade point average was derived from the section, with the teacher having, with the assistant class sociograph (see, Meyer, 1977; Kapsalis, 1983), only a small (1-3 points), modifying, intervening in it. So each child, a member of a founding team, learned (Hadjiefthymiou, 1994) to evaluate others, but also responsibly (every first day of the week the performance of each child was announced (unless it was desired).

Discipline was now a matter for the plenary (for urgent cases, direct voting, obvious or secret, the same for everyone, by decision of the executor immediately, otherwise, on account and at the end of the week) (Rokoudi, 1990). This led the children to take responsibility for what they do in the classroom, making them respect the basic rule of democracy in which the freedom of each of us stops where the freedom of the other begins. In the last quarter of an hour, the plenary met regularly, discussing everything, even the class statutes, about our next steps: nothing would have happened next week if it had not been for the children themselves. This made the children think responsibly about their future, taking the initiative, for the best, in the classroom, and, most importantly, expressing it openly with the courage of a free citizen who cares about the common good.

Let the teachers try the (difficult for them of course, but teachers are for the difficult and not the easy, in the classroom, when, in fact, they are children) method, in the worst case they will not lose children as students.

SUMMARY

In frontal teaching, class could have no reason for each child's action, which was, in fact, individual. Circular placement of desks turned parallel individual actions into a group action, in which, now, they could, in fact, with desks in a circle, where everyone is face to face, have all same opportunity to be co-creators, in common work of class. Teacher, from being leader of class, was transformed into a coordinator of its group, who would carry out lesson. Initially, a sociogram was designed, to show children's relationships, by children themselves. At end of it, there was a discussion, about operating statute of class, and drafting and signing of it. From previous one, children were informed about lesson of day, in order to process it. After a very brief introduction, classroom (course was a single discussion platform) became a vast workshop. Each child, having a complete picture of action of others, could be a regulator of result. Resulting product was imprinted in competition-type evolving large books, made by children, for each lesson, for all interests, as "Free Optional Homework". At end of year, Board of Directors, with an advisor in this regard, teacher, held Competitions: best participation. All entries had a chance in Competitions (titles and books, by teacher). It was simply a matter of ranking. As children were co-creators of course, they had every reason in its evaluation. For each child, grade point average came out by department. In this cross-assessment, teacher had only a small (1-3 points) modifying intervention. With help of sociogram, performance of each child was communicable in class resulting every week, month, quarter / 4months. Teacher was also included in evaluation, if we were to continue, together, next year. Children learned (according to letters from their later collaborators) to think democratically, that this is what we want for society.

THANKSGIVING NOTE

The Practice, which inspired, designed and implemented, for 35 whole (linear or in parallel) years, as a teacher or as a School Counselor of Philologists and Scientific and Pedagogical Guidance of all specialties, in formal and informal, of all levels, Education, the honorary First School Counselor K.V. Dimoulas, was presented (available in the complete course files, in the hands of students, pupils, and in their respective Institutions) in Higher Education, in the context of the courses (School and Educational Psychology) of its designer, as well as in Public and, mainly, Private, Vocational Training Institutes and also Vocational Training Centers, and in post-secondary Institutions, but, mainly, in Secondary Education, in the context of the obligations of training its teachers, as School Counselor of Philology and School Counselor in the schools of the prefecture of Larissa, and in his four terms, but also in schools of the prefecture of Magnesia, for two years, during which he was assigned schools of this prefecture, as well as as a guest special speaker, in pedagogical issues, by other Schools Counselors, Secondary, mainly, but also Primary Education of the prefectures of Larissa of Magnesia, but also of other prefectures, by Schools and other prefectures, but also by Associations of Parents and Guardians of students of the Secondary, mainly, but also of Primary, Education, and then, as an honor. Thanks are due to all those who, at least, agreed to see it and, much more, to those who tried to implement it, even if due to a admitted difficulty of implementation they did not appropriate it and did not apply it. The Practice processed a subgroup (the members of the Managing Authority of our Educational Organization on Psychobioanalysis Education "ἐκ τῶν ὑστέρων" Euripides K. Dimoulas, Elli K. Velliou, Theodora Ev. Papadimitriou, Angeliki A. Koutsavliaki, the presenter of our work at Conference Anthi Vachtsevanou, Styliani Thivaïou, who transcribed the text into English, and Olga Kourtoglou, Nikolas Ververas, Christina – Chryssanthi Vamvouri - Dimaki, Nektaria - Filitsa Agrafioti, furthermore Apostolia Argyri, Christos Avgerinidis, Maria Giannoula, Christina Gaitatzi, Dimitrios Dimakas, Irini – Chrysovalanti Drosinou, Constantinos Zampakas, George Zampetoglou, Panagiotis Zissopoulos, Vassiliki Zissopoulou, Antonia Kappe, Stamatia Kappe, Ioannis Konstantinidis, Christos Babalis, Dionysios Barbakas, Vassiliki Papakrivou, Christina Patsiora, Paraskevi – Athena Saiti, Ioannis Trigas, our technicians Dimitrios Liovas and Christos Polyzos, but also, Sofia Bitsani, Margaritis Pournaras, and others, all members and collaborators of our Organization) of our wider, numerous, open, interdisciplinary Working Group on Psychobioanalysis Research, whose axis of work is (at the beginning) "gender / sex as a question".

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THE MORPHOLOGY OF THE LEAVES

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ABSTRACT

In this present work is presented a teaching proposal in the form of an educational scenario, for students studying in the 2nd grade of the Professional High School (EPAL), in the course "Plant Production" and more specifically, in the section "The morphology of the leaves". This teaching proposal is based on the exploratory teaching method, which advocates the view that when knowledge is actively constructed by the trainees themselves and starts from their own pre-existing knowledge and experience, it is deeply understood by creating mental constructs which can be utilized in real life which is one of the demands of 21st century education. Its main goal is for students in an environment rich in learning stimuli to understand the morphology of the leaves, and their function by adopting a more favorable attitude towards plants and nature in general, while evaluating the knowledge they have acquired through criticism and analysis of the structural elements that make it up.

Key Words: exploratory method, leaf morphology, teaching phases, teaching scenario.

INTRODUCTION

Discovery learning

The model of exploratory learning is directly related to experimental research and hypotheses, which need to be done by the learner in order to be able to come to a conclusion that can be verified under the same experimental conditions. In this way, the learner makes assumptions, experiments and participates in activities related to scientific research in order to grasp concepts and laws (Patapis, 1993).

The scientific community arrived at the didactic model of exploratory learning after the chronic application of the traditional teaching model and its failure to orientate with general questions, which simply preceded the participants for the event to be investigated, the introduction of new knowledge with the main presentation of the cognitive content, the application of the new knowledge through exercises and problems often cut off from everyday life and the final evaluation of these new acquired knowledge through the memorization of definitions and summary type exercises aimed mainly at the recall of the memory capacity (Kokkotas, 2008).

Because teaching is an exploratory process towards the mental construction of concepts based on criteria related to phenomena and situations that make sense to students, the formation of concepts is essentially a process of integrating individual elements into a relationship framework that promotes understanding and assimilation, being in essence the key concepts to the investigation and elaboration of a topic (ASPAITE, 2016). In addition, in every teaching practice, goals are set, which must be measurable and specific and implement the purpose that is general, broad and non-measurable (Bosniadou, 2002).

In the model of exploratory learning, the subject being investigated comes from the personal experience of the learner and he / she is led to the search exactly as the scientists who actively participate in all the course of the exploratory action do. In this way, the student asks questions, experiments, researches and participates in activities that are directly related to scientific research in order to conceive concepts and arrive at generalizations (Patapis, 1993).

Discovery learning includes phases, which according to Chalkia (2012) are the following: a) is the phase of orientation in which the teacher asks questions, arouses individual interest and directs the learners to the research and action, b) follows the phase of formulating and checking the first hypotheses posed by the students as ways of controlling the formulated hypotheses are suggested just like in an experimental research that aims to discover a concept at birth c) the first results are applied and implemented through daily problems of the local community and new questions arise, and at the

end d) the new knowledge is checked through open-ended questions and a final evaluation is formulated.

Curriculum and exploratory learning

Dewey (1930) as cited in Bybee, Taylor, Gardner, Van Scotter, Powell, Westbrook and Landes, (2006) pointed out that there was almost no approximation between the Curricula of that time and the exploratory method as the teaching focused on study of facts and did not aim at the science and scientific research that could be carried out in the classroom. In fact, in order to emphasize the scientific study, he developed a didactic model, which included six phases in which the student plays an important role and the teacher simply facilitates (Barrow, 2006). A few years later Dewey changed these phases to four:

- In the presentation of the problem
- In formulating a hypothesis
- In data collection
- In the announcement of conclusions

From then on, many writers engaged in the method of research and formulated their own scientific data. In conclusion, in this didactic approach, the role of the group and the cooperation between its members are particularly important, as in this way creative proposals and problem-solving methods emerge, the knowledge of the students is realized with the simultaneous emotional and psychological support. (Chalkia, 2012).

Levels of exploratory approach to teaching

The exploratory approach to teaching practice after Dewey, who was the first author to deal with it, attracted the interest of other researchers, who studied this approach and reported that there are levels that for teachers it is easy to approach this teaching model. These levels have changed over time and in their most recent version include the following types: a) the type of confirmation inquiry, the structured inquiry, the guided inquiry and the open investigation (open inquiry). The key features of each type of this teaching approach, according to Arslan (2013) are the following:

Table 1
Levels of exploratory teaching model

Level of Investigation	Characteristics
Confirmation Inquiry	There is a research question around which all the research is planned in which a portion of the students and the teacher himself participates. The participants reach a result which is made known to the plenary of the class. Another group of students following the instructions given by the first group confirms the results.
Structured Inquiry	The research question is formulated by the teacher and is the one who gives the guidelines for the whole research process. Students explore the research question, arrive at some results through a research-focused course, and interpret the results.
Guided Inquiry	There is a question that is asked together (teacher and trainees) and again the exploratory course is planned together. Both sides come to conclusions and give their own interpretation to the results.
Open Inquiry	Students ask the research question themselves, plan the exploratory course and interpret the results they come to.

Natural sciences and exploratory learning method

The promotion of science in school aims to provide in addition to knowledge, communication and metacognitive skills among students and prepare them for the challenges of the 21st century. These challenges can only be addressed when the goals set are to promote scientific literacy and develop scientific skills (Turiman, Omar, Daud, Osman, 2011). The development of scientific literacy takes place through the collection and analysis of data from scientific observations, the formulation of hypotheses, the collection of data, the control under the same conditions, the confirmation of hypotheses and the representation of phenomena (Ford & Forman, 2006). The general goals set for the

realization of the exploratory method are: a) learning, b) psychomotor and c) emotional (Kalkanis, 2013). Of course, in order to achieve these goals, they need to be specialized and realized in an environment rich in stimuli and with collaborative practices.

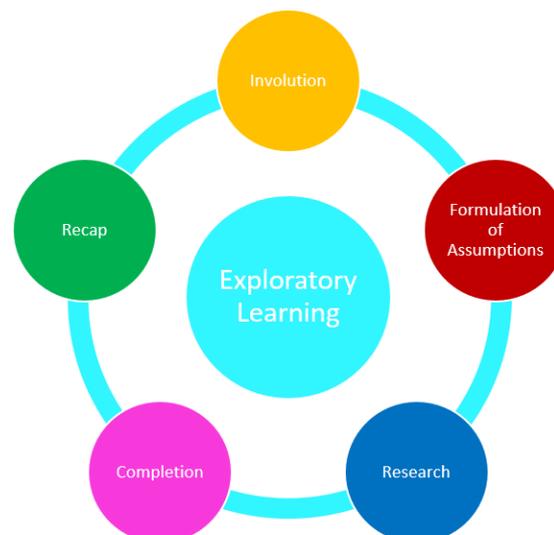
Teachers, for their part, need to put aside the classical teaching method and structure modern teaching practices, which will help to understand and clarify the process and the creation of scientific knowledge (Maxwell, Lambeth & Cox, 2015).

Scientific research is cultivated through exploratory learning as the student is provided with skills such as:

- Critical thinking
- Data collection by scientific methods
- Adoption of scientific terminology
- Awareness of setting goals commensurate with learning outcomes
- Emergence of the concept of learning effectiveness in each set goal
- Documentation of cases, views and positions cultivating self-esteem and self-respect through the development of collaborative practices but also the promotion of individual responsibility

The above skills are cultivated through the realization of five main phases of investigation, which are: a) the phase of involvement, b) the phase of formulation of cases, c) the phase of research, d) the completion and e) the recapitulation the whole learning process. More specifically, the first phase of involvement is implemented after the exposure of students to a reflection, a hypothesis that is directly related to everyday life and therefore arises through their interests. The second phase, which includes the formulation of hypotheses, raises questions, but which the trainees are encouraged to define on the basis of scientific criteria and to formulate them in scientific terms. Of course, formulating assumptions is not an easy task and requires familiarity and experience. The third phase, which concerns research, is mainly based on practical activities that require the collection of data and the use of scientific methods that lead to the experimentation and interpretation of data. The fourth phase includes the presentation of the whole course and the data and is re-evaluated and the last phase is directly related to all the previous ones and includes the general summary and the metacognition. Schematically, are the stages of the exploratory method presented as follows:

Table 2
Phases of exploratory teaching method



The exploratory teaching method which combines with the teaching of natural sciences gives the trainees the opportunity to choose the research questions themselves, to choose ways of utilizing the research and experiments that make sense for them and to come in contact with elements of the research method through trial and error, which is given another meaning. In order to accomplish all the above, the students need to become familiar with the research questions, to create the conditions for the

control of the hypotheses, to apply the new knowledge in order to check and confirm or refute the hypotheses and to generalize the conclusions, to proceed with the evaluation and finally to make an effort to understand not only the result but also the whole research process towards knowledge.

The natural sciences and new technologies

New technologies have become part of the modern path to learning since now students from primary school age are quite familiar with them and digital tools. Research has shown that digital literacy is essential for the promotion of scientific research (Kalogiannakis & Papadakis, 2018) and this is because they offer the necessary visualization and direct connection with the representation of phenomena of the natural world with the ultimate goal of data research and the final consolidation of scientific knowledge.

In addition, digital tools enable the teacher to perform simulations, representations, the use of visual material, to find scientific sources and to use them all according to the level of knowledge of the living material of his class, learning objectives, assumptions made, students' cognitive needs and scientific interest.

The educational scenario

An educational scenario is defined as a learning context that has a specific subject with clear educational goals, teaching principles and actions and can be implemented in more than one teaching hour (EATY 1 & 2, 2010). The didactic script has a structure that includes the following features: a) the identity of the script, which gives information about the age group of the trainees, b) the subject and its connection with the Curriculum (A.P. S), c) the creators of the script, its goals and d) the conclusions it reaches.

A well-designed training scenario includes five main axes, which include the following:

1. the issue of the educational scenario
2. its form and content
3. the didactic methodology
4. the teaching strategies
5. the utilization of new technologies

More specifically, regarding the problematic of the scenario, we refer to the interdisciplinary approach of concepts and methods that are utilized with the use of digital tools and in general, the cultivation of digital literacy in the classroom. Form and content are directly related to promoting the exploratory and discovery type of learning activities, cultivating critical thinking, problem solving and decision making. The teaching methodology is directly related to the selection of the appropriate method depending on the profile of the students. For each well-designed teaching proposal, it is necessary to choose a teaching method that is compatible with the environment and human material. The choice of teaching strategies is directly related to the promotion of collaboration, communication and interaction and finally, the use of digital applications helps to solve problems, to find knowledge sources, to model natural phenomena and in general to search based on scientific data.

THE PRESENT EDUCATIONAL SCENARIO

In this specific educational scenario, the exploratory teaching method was chosen that promotes scientific thinking and lays the foundations of field research in school practice. The specific method following the model of ASPAITE (2016) is structured in six main phases with the first to put the students in an initial state of reflection, the second to formulate assumptions on the subject to be taught and to take care of the data collection to be processed, the third to proceed with the organization and control of the cases that have been raised and to make a first attempt to formulate collective conclusions. The next phase, refers to the analysis of the research process and applications that make sense to the trainees are implemented, the fifth phase concerns the evaluation of the whole process with self-assessment and hetero-assessment procedures that lead to metacognition and the last phase of the exploratory method is related to the recapitulation of the produced learning material (ASPAITE, 2016). All the individual phases of the proposed teaching proposal include the use of digital educational applications that give the educational practice vitality and mood for further research with a variety of sources (web, digital libraries, etc.).

In addition, this proposal is based on Bloom's goal, which includes hierarchically structured levels (knowledge, understanding, application, analysis, synthesis and evaluation), which of course are not linearly structured but may be circular and overlapping. Specific objectives of the teaching proposal are at the level of knowledge for the trainees to clearly define the meaning of the leaf, to name the parts of which it consists and to distinguish it based on its characteristics. At the skill level, learners need to become familiar with the ability to collaborate by developing interactive action with their peers and by clearly asking their questions and queries. Finally, at the level of attitudes, the goal is to feel more familiar with the natural environment and to become aware of nature and its problems that in modern times are constantly deteriorating.

Main part

Phase 1: Preparation of the teaching - formation in groups - undertaking of the new project

Before the introduction to the main part of the teaching course, it is proposed to prepare the teaching framework with a general reference to the previous lesson and the conclusions reached by the group. This is followed by the random division into groups through the digital application "Wheel of names", which gives a playful character to the educational process and acquaints the students with the technology and digital literacy. The roles of team members are understood from the beginning (representative, secretary, members). Also, for group work, the rules of cooperation are reminded and the action plan is drawn up by the trainees themselves. The special research steps are listed on the board or a piece of paper and posted in a prominent place in the classroom. The aim of the visualization of the research plan is the recall to the memory whenever necessary.

The undertaking of the new project is carried out by demonstrating audiovisual material through a video that contains general information about the sheet and introduces the participants to the path to knowledge and the subject to be investigated. Based on the visualized new knowledge, the groups are given a research question on the subject, which is formulated as follows: "Based on your personal experiences and what you have just seen and heard, what do you think is the role of the leaf for the plant and nature in general?". The team members collaborate and present themselves with the method of brainstorming in a semi-structured dialogue. Their views and statements are recorded by the class teacher in the "teacher's diary" and electronically through the digital application "AnswerGarden". The views are grouped based on criteria and a mental map is created with the "XMind" application, which is the basis for further investigation and subsequent evaluation.

Phase 2: Collaborative processing

In the second phase the teacher provides the groups with further material for observation and processing. In the first group he gives natural leaves different from each other for scientific observation and magnifying glasses while in the second he proposes websites that contain material for study where elements related to the leaf are presented such as the morphology and its special features [https://el.wikipedia.org/wiki/Φύλλο_\(βοτανική\)](https://el.wikipedia.org/wiki/Φύλλο_(βοτανική)) ή <https://www.jardineriaon.com/el/cuales-son-las-caracteristicas-de-las-plantas.html>.

Team members work on the resources provided by the educator but can suggest others at their own discretion. Their remarks are recorded by the group secretary in order to be presented to the next level.

Phase 3: Presentation of works

The third stage of the exploratory method involves the presentation of the results of the previous phase. Thus, the representatives of the three groups present to the plenary of the class the conclusions of their study. In addition, for in-depth research and reflection the teacher gives the same worksheet to both groups with the following question: "What do you think are the main parts of the leaf and in how many categories are they distinguished?"

The role of the teacher during all phases is coordinating and facilitating, always keeping in mind the multiple key skills that learners seek to develop while taking care of their mobilization with actions that include digital applications.

Phase 4: Analysis of research process

The trainees analyze in detail the course and the strategy they followed to reach the specific learning outcomes. It is suggested that they create their own presentation to demonstrate the path they followed from the beginning of the exploratory process, in the plenary of the class. In this way they give a definition for the leaf, they present the parts of which it is composed and its ribs. They also categorize

the leaves and give their own definition for these categories. Natural leaves and sources of information are at their disposal. Alternatively, they can create their own audiovisual interactive presentation using the “Active Presenter” digital application. After the group presentations, the teacher gives his / her own version, making his / her personal presentation through the classroom projector. The corresponding comparisons, questions are made and the first conclusions are drawn.

Phase 5: Evaluation

Throughout the teaching process, all three forms of assessment are applied (initial, formative and final) through semi-structured dynamic dialogue, systematic observation and the application sheet that students are asked to complete in groups. The final assessment is made through the “Kahoot” digital application with closed-ended questions with which each student self-assesses himself / herself in a playful way. Assessment sheets are also given one for each group, the results of which are announced in the plenary of the class and in this way the conditions for hetero-evaluation are created, as well as with rubrics for the evaluation of the overall learning process.

Phase 6: Summary

The last phase refers to the recapitulation, which is carried out with verbal motivation from the teacher and the creation of a new concept map through the same digital application (XMind). The aim is to compare the two concept maps (initial and final), for students to understand the cognitive course they went through and to understand the evolution of their research activity and the enrichment of knowledge. In addition, students are given rubric assessment for the teacher as a bottom-up internal assessment effort.

CONCLUSIONS

In this course the exploratory teaching method is proposed because the trainees need to learn to research and to propose their disposition for scientific researches that can introduce them to the scientific approach of knowledge and not to the process of gathering knowledge that will surely be overcome or they will be forgotten. It is well known in recent years that classroom research is capable of leading to the development of critical thinking and the discovery of steps that accompany new scientific knowledge. In addition, a key component of quality development in teaching is that related to the application of collaborative learning and the use of digital applications that, when properly combined, provide coherence to the student-centered structured activities proposed in this particular teaching proposal.

At the same time, the main objectives are utilized with the best possible results, increasing the interaction and cooperation between the trainees and the teacher, thus facilitating both the didactic and the learning work of the two involved parties and enhancing the learning outcomes.

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EDUCATIONAL PLAN USING QGIS SOFTWARE

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ABSTRACT

The Curriculum for the High School defines the course of digital cartography as part of the general unit "Topographic design and digital cartography", which has as its main purpose of teaching the familiarization of students with the Geographic Information Systems software (GIS) with the proposed open source software (QGIS)". In order to carry out the teaching of the specific subject in this work plan, the principle of differentiation, creativity and cooperation between the trainees is utilized and the latter seeks to understand that digital cartography and geoinformation systems are necessary for digital depiction of a place or a point of interest (historical, cultural, etc.). In the implementation of this scenario, open source software is used as the teaching process is not linear or predefined, which allow the creative expression and interaction of students and in particular the open programs "Story Board That", "Google Earth" and "QGIS" are used.

Key Words: digital cartography, geoinformation systems, teaching plan.

INTRODUCTION

The term "Geographic Information System" (GIS) refers to the structured aggregation, presentation and analysis of data, with spatial and geographical dimension with correspondingly related information. According to (Kapageridis, 2006) geographic information systems refer to a set of tools for collecting, storing, retrieving, transforming and displaying spatial elements of the real world. Another definition for these systems is that of McDonnell and Kemp (1995) who define these systems as a computing mechanism designed to collect, manage, integrate, exploit, analyze and display data, which are part of earth surface. In recent years, these systems have infiltrated the daily activities of modern man as it is increasingly necessary in the everyday life to find some geographical information.

Moving on to the functional use of GIS and the space-information correlation, two basic data models are proposed by the literature:

- The correlation model, in which each data category is in the form of a separate register and,
- The object-oriented model, in which the two data categories are co-located in physical modeling objects (roads, parks, lakes, etc.) (Coppock, Terry & Rhind, 1991).

The object-oriented model is the one that is used the most because it is easier to use and simple with regard to modeling objects with physical and spatial dimensions (Coppock et al., 1991).

Historical analysis of geographic information systems

Homeland of the aforementioned systems is mentioned to be the USA where organizations such as the US Geological Survey, the US Bureau of the Census, etc. helped in their development. More specifically, there are five time periods that contributed significantly to the development of GIS and these are:

1. From 1959 to 1975 where mainly individuals dealt with these systems. The first model created was the so-called MIMO (map in - map out) which was the basis of the geo-code. In 1964 Fisher founded the Harvard Lab for Computer Graphics (1964) the first research center for the development and management of spatial data. This development brought the first automated computer mapping system, which was considered as a revolution in the field of geoinformation (Skafida, 2014).
2. From 1970 to the beginning of 1980 we meet for the first time an expression of interest from the state. The CGIS system became fully operational in the 1970s and new GIS applications were created, such as the city map of Jerusalem based on grid control systems. Almost at the same time, Switzerland commissioned the creation of GEOMAP (Geographic Mapping Program), which enabled the printing of "shadow maps". From that year on, the organization of the first conferences began and in 1971 the first database for the physical data of several roads of major world cities was created. In addition, in 1972 the first satellite launch for spatial data collection took place and at the end of the

decade the Harvard Lab developed ODYSSEY GIS, the first GIS structure that uses vector (Skafida, 2014).

3. From 1982 onwards, the commercial dissemination for the use and operation of geoinformation data by satellites worldwide began. Also, in the mid-1990s, the first postgraduate diploma in engineering was created in Edinburgh and the publication of journals on geographical technology began (Skafida, 2014).
4. From the mid-1990s the first steps were taken to internationalize data using the European Umbrella program and research activities spread throughout the world (Skafida, 2014).
5. With the entry of the 21st century it became known that the use of GIS plays a very important role in a variety of activities of everyday life and is constantly finding applications in many actions of technical companies and services (Skafida, 2014).

Characteristics of geographic information systems

The great development and dissemination of geographic information systems became a reality because their data can be used in spatial planning, i.e. in the formulation and evaluation of policies and programs related to physical or environmental design (Koutsopoulos, 2002).

Geographic information systems represent a powerful set of tools designed to collect, analyze, transform and display real-world spatial data. Such a system is responsible for the following activities:

- It is able to store, manage and integrate a large volume of spatial data
- It is the most appropriate spatial analysis tool that focuses on the spatial dimension of the data
- It is an effective mechanism for solving spatial problems through the organization, management and transformation of a large volume of data so that the information is easy to use and accessible to all who need it (Vassiliou, 2017)

A system of geographical information models the geographical space and recreates in digital form all the spatial elements that compose the space, presenting their existing interdependencies (Koutsopoulos, 2002). In addition, it supports the systematic organization of geographic information, the automation of large volumes of information, the creation of spatial planning mechanisms and the use of tools aimed at decision-making and highlighting the design and development processes of the natural and structured environment (Vassiliou, 2017).

All data and information collected are stored in relational databases, which are forms of spatial data storage. Thus, there is the possibility of developing both simple and complex models. Simple models represent points, lines or polygons, while more complex models include networks, topology and, more generally, sophisticated features. Spatial and descriptive features are stored in tables in relational databases (RDBMS) (Vassiliou, 2017).

GIS operation procedure

In the operation of these systems it is necessary to develop and exploit the data collected through GIS. This process requires a series of steps (Crowther & Hartnett, 2001), such as:

- Data collection and input: in this first stage spatial and descriptive data are integrated into the system. This data must be in digital form and must be obtained from the digitization of existing maps or from the collection of primary data using digital mapping methods.
- Data processing: proper data processing is essential for the next step which is their analysis. For their correct processing, the received data needs to be properly rendered in order to create new data, and this correct rendering can be done by creating relationships of the new data, either by correcting any errors or by moving from one structure to another. The data are divided into two main categories: a) in spatial e.g. position, dimensions, etc. and b) in the descriptions, which represent values e.g. forest areas for 2018
- Data analysis: during the data analysis, data are requested that take into account the potential of the database and its dimensions (spatial, temporal). Their course is analyzed but at the same time an attempt is made to predict possible new data
- Data display: after analyzing the data, its results are displayed in various ways, either analog or digitally through online platforms.
- Checking results: to check the results each geographic system needs to have retrieval mechanisms to check the accuracy of the information. This is done through graded rules, by checking the accuracy of spatial coordinates and by qualitative and quantitative

checks in the database. Important quality criteria are completeness, accuracy, timeliness and consistency of data with the real world (Crowther & Hartnett, 2001).

QGIS software

Quantum GIS (QGIS) software is a free software, released in 2009 and gives an easy-to-use and functional interface to the user as it supports various mosaics and vector data formats with the possibility of adding new features (Tzortzakis, Striliga, Sifaki - Pistola, Leounaki, 2015). It integrates tools such as the design and the simultaneous design of vector and normalized geospatial data. Supports multiple such formats and communicates with spatial databases

QGIS is a viable alternative because it is collaboratively developed by many people and includes 3D imaging, spatial analysis automation and massive iterative work. It consists of a digital representation of selected features of a specific area on or near the earth's surface and has been created to help solve problems and serve a scientific purpose. Maintained by a team of volunteer developers who make updates and fix bugs. It has been translated into 48 languages and is used in academic and professional settings (Koutsopoulos, 2002).

This development has made it imperative to enter the education of the basic principles of geographical systems, at least in terms of acquiring knowledge in basic principles such as the collection, management, analysis and dissemination of geographical data and all this through the implementation of a teaching scenario that promotes the transition from frontal teaching to collaborative learning and the active participation of all participants in the educational process. In fact, the use of teaching scenarios that utilize new technologies favors, among other things, the development of skills in learners such as the cultivation of critical thinking, the ability to explore and search for information in a wide range of data, the ability to model the phenomena of the real-world, the development of cooperation and joint the approach to research data (EATI Education and Training Department, 2010b).

Definition and structure of the educational scenario

According to the teacher training material (issue 1 & 2) of the Education and Training Sector (2010) as a didactic scenario is considered the description of a teaching with focused knowledge, specific educational goals, teaching principles and practices. Each educational scenario can last for as many teaching hours as deemed necessary by the teacher. It is implemented through a series of educational activities which have a structure and derive from the interests of the trainees. So there need to be interaction and feedback. The activities of the script can be simple and complex and not presented in a linear order, while the teaching situation that it describes is more complex and focuses on broad concepts. During its design, educational software, notes, sites, supervisory bodies are included in order to achieve the desired educational result (Fragaki, 2008).

Educational script structure

The structure of a script can vary, however a typical form according to Fragaki (2008) is the following:

- A) Scenario identity, which includes:
 - targeted audience (age, knowledge, etc.)
 - known object
 - assignment to the Curriculum (APS)
 - script writers
 - a brief summary of the subject matter of the script
 - purpose and objectives of the scenario
 - benefits from its use
- B) Scenario implementation framework, which contains:
 - the required level and required prior knowledge
 - classroom organization - collaborative practices or individual process
 - cooperation as the cooperation of teachers of different specialties may be needed
 - script start time combined with prerequisite knowledge
 - duration of the scenario and frequency of its application description of the required support material
- C) Teaching process, which includes:
 - brief description of the theoretical framework on which the scenario is based
 - teaching framework, which contains the teaching model and references to theories used

- methodological framework, which describes how the teaching is organized (eg brainstorming, semi-structured dialogue, simulations, etc.)
 - main purpose and sub-objectives of the scenario always in direct relation to the methodological framework and the learning level of the trainees
- D) Implementation of the scenario, which is analyzed in the following steps:
- problem definition in the form of a question or assignment
 - detection of learners' prior knowledge
 - evaluation of the activities required to achieve the scenario through the reactions of students in order to improve the learning process
 - the final result which can take the form of:
 - written assignments
 - mental maps
 - educational applications
 - multimedia presentations
 - theatrical games
 - constructions
 - reports
 - social activities etc. (Fragaki, 2008).

THE PRESENT EDUCATIONAL SCENARIO

The present educational scenario which has as its main purpose the understanding by the students of the basic elements that govern the digital cartography, the geoinformation systems and the implementation of simple steps that are necessary for the complete digital representation of a place or a point that is interested in them, seeks to use the "Story board That" software, which is easy and fun to use, to help the teacher by promoting the principles of collaborative teaching, according to the model of social constructivism and the zone of impending development to involve students in interactive processes that will highlight the talent and skills of each individual but also to positively involve in the learning process each involved with objective educational benefits, such as the investigation, synthesis, understanding and promotion of multimodal and technological literature in the daily educational process but also in everyday life.

The cognitive areas involved in this teaching scenario are those of computer science and mathematics. It is based on the students' prior knowledge of computer operation, familiarity with the "Google Earth" software environment, familiarity with the "Story board That" software as well as the "QGIS" software environment. Its main goal is to capture reality and communication through the use of different semiotic systems (e.g. images, visual symbols) in the context of multimodal literacy using new technologies. The individual goals are the students at the end of the educational scenario, to be able to:

- define the concept of georeferencing
- enter a map snippet and geo-report it according to the checkpoints,
- and determine the actual coordinates of points on the geo-referenced map

In the implementation of this scenario, open source software is used as the teaching process is not linear or predefined. This allows the creative expression and interaction of students and they take place in this educational scenario by using in particular the "Story Board That", "Google Earth" and "QGIS" software and becoming familiar with them.

SCENARIO ID

Scenario's Title: "Georeferencing map using known coordinate checkpoints"

Author: Aikaterini Markopoulou

Course: "Digital cartography using GIS software"

Module: "Geographic Information Systems Software"

Duration: 2 teaching hours

Class to which it is addressed: the didactic script is addressed to the students of B 'EPAL in the context of the course "Digital Cartography"

Implementation requirements for the teacher: possibility and availability of application of flexible teaching approaches

Implementation requirements for the trainees: detailed and clear instructions for the teaching process followed, through Power Point

Course of teaching

Compatibility with the Curriculum: this teaching scenario is fully compatible with the A.P.S. for the High School as the specific course is taught in the 2nd grade of the Professional High School (EPAL), of the specialty Structural Designer and Geoinformatics of the Construction Works sector

Cognitive areas involved: computer science, mathematics

Knowledge and previous ideas and perceptions of students:

- PC operation
- Familiarity with the Google Earth software environment
- Familiarity with comic lab software
- Familiarity with the QGIS software environment
-

Aim and objectives: the pursuit of reality and communication is sought through the use of different semiotic systems (e.g. images, visual symbols), in the context of multimodal literacy and the use of new technologies.

Software category: open source software is used (the teaching process is not linear or predefined), which allow the creative expression and interaction of students.

Detailed description of the teaching process based on the chronological sequence of actions:

1st TEACHING HOUR

1) Motivation – Preparation

Activity 1: the introduction to the topic of the unit is made by the presentation by the educational visual material that give the students the opportunity to observe map images with simultaneous marking of points on it. Following is a discussion during which the views and concerns of all students are recorded and with the method of brainstorming, their synthesis is carried out and the definition of "Geo-Reference" is given.

Activity 2: with the guidance of the teacher, students are encouraged to extract a snippet of a map from Google Earth by following these steps:

- a) Open the Google Earth digital environment
- b) Select a specific icon titled: "Add place mark" and add four (4) dots to landmarks on a Google Earth digital map, which students locate using a hyperlink
- c) Save the map excerpt as an image in .jpg format

2nd TEACHING HOUR

2) Course editing - Reference System

Activity 1: to define the reference system in the qGIS environment, it is first defined so that students can make a first contact with it. The map is then inserted and the students are instructed to set up the checkpoints. From the toolbar, select the "Add Point" icon and place it on the selected coordinates.

Activity 2: follows the configuration of the georeferencing transformation, which is done by the tools of the menu line "settings" and "transformation settings". Finally, the transformation configuration is completed and the window is closed. To check the result of their actions, the students select from the menu the indication "file" and then the "start georeference", which gives the command to complete in a few seconds, the image of the map and to enter on the qGIS home screen.

Activity 3: at the end of the teaching process and the activities the students open a document that is on the desktop of the computer and are asked to indicate the proposals with which they agree by underlining them in red. In this way it is recorded:

- a) Their experience
- b) Any difficulties and particularities encountered during the educational process
- c) The existence of evidence from the application
- d) Feedback data

SELF-EVALUATION SHEET

Color in red the sentences you agree with:

- a)
 1. I was tired of teaching
 2. The lesson was enjoyable
 3. I worked very well with my classmates

- b)
1. I would like to have the opportunity to teach each lesson via computer
 2. I did not understand exactly what the teacher was asking for
 3. I was disturbed by the noise in the classroom from the group work and the use of computers
- c)
1. I got acquainted with the digital map of Coogle Earth
 2. I was able to capture coordinates on a digital map
 3. Understood the process of saving a map as .jpg
- d)
1. The step-by-step teaching helped me to understand difficult points of the lesson
 2. What the teacher showed, through her own Power Point, led me to the realization of the objectives of the lesson
 3. I understood the importance of using coordinates on a digital map worldwide
 4. The comic lab software made the lesson enjoyable

CONCLUSIONS

This teaching scenario using ICT provides a guide to selected activities and used digital tools (open and closed type software) that specialize in learning environments and cultivate learners' digital literacy. In addition, it approaches interdisciplinary concepts from various disciplines in direct relation to the Curriculum. It provides instructions and has been designed with simple steps starting from the theoretical framework, in which its problem is included, the required materials for its implementation and evaluation. In short, it is a complete didactic intervention with purpose, objectives, problematic, implementation process through appropriate activities and teaching strategies as well as evaluation process and all this in a framework that aims at the emergence and reconstruction of students' prior knowledge and reconstruction of the representations that the latter have about the concept to be studied with their simultaneous acquaintance with educational software.

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COURSE OF MUSIC INNOVATIVELY TAUGHT VIA ICT AT PRIMARY SCHOOL

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ABSTRACT

Nowadays, there has been an increasing need for the ICT (Information and Communication Technologies) integration in the educational field so that school can contribute to the development of future, capable, active citizens.

Today's students need innovative teaching methods in student-centered classes and new learning frameworks characterized by digital tools so that school stakeholders' roles will be upgraded and soft skills (4Cs) and mind-skills would be developed too.

Thus, this work presents through qualitative research the supportive utilization of ICT in the Music course of a Greek Primary school using digital tools and m-scripts at the 5th and 6th grade.

Key Words: ICT, innovative teaching method, m-scripts, digital tools.

INTRODUCTION

Nowadays, the educational reality is characterized by tremendous technological development that introduces new types of learning (exploratory, electronic and mixed) and by the need for the integration of "Information and Communication Technologies" (ICT), as Kiridis, Drosos and Dinas call them (2005), in it so that the education can achieve its multidimensional role which is to create active, skillful citizens, ready to meet the needs of the 21st century and cope with complex problems successfully in their routine.

As a result, in a frame that constantly changes, teachers are called upon to reflect outdated pedagogical perceptions, to try new student-centered ones, to develop the appropriate culture in the classroom (Feldman, Konold, Coulter, 2000) and to promote among students skills for realistic situations in real conditions (Crook, 1996) with the utilization of digital tools.

Thus, today's schools need to incorporate innovative teaching practices, especially in the Art-courses, which will embrace digital tools. This will not be achieved if the traditional teaching routine and school culture don't change.

Such an innovative teaching method is suggested by this research-work which recommends the supportive use of ICT in the course of Music through m-scripts and digital tools in Primary education. Specifically, this current work aims to:

- pinpoint and reveal the supportive character of ICT at the learning process
- to show the contribution of New Technologies to the improvement and enrichment of teaching
- to suggest ways for planning and teaching a Music lesson by using digital tools via m-scripts
- to lead teachers to the reflection of their role in class and hopefully to their taking initiative for their professional development
- to create an upgraded and more active role for students at the learning process

Theoretical framework

Need for innovation

"Innovation" means "essential reforming or vital change" according to Mpabinioti's dictionary (1998). Moreover, real innovations do not aim only to the reforming of products and services but to their effective improvement (Marsh, 1997) as well. Additionally, in the educational field innovation is combined with new, fresh ideas into practice (Athanasidou, 2005). It has to do with a set of actions that

derive from modern conceptions and focus on implementing new tools in the teaching and consequently in the learning process (Dakopoulou, 2008). Furthermore, educational innovation is associated with a new way of thinking on behalf of all stakeholders (Siakovelis, 2011) and with non stopping changes in the teaching plan so as to be updated (Otto, 1970).

New Technologies and Education

The rapid and constant development of New Technologies couldn't have left the educational field unaffected nowadays. When referring to New Technologies and therefore ICT (Information and Communicational Technology), we mean the technologies which, according to Komis (2004), help with the process and transmission of a range of information (symbols, pictures, sounds) and messages. Their impact has been so great that not only have they affected the teaching process but they revealed that the traditional teaching methods seem inadequate to fulfill the modern educational needs too (Solomonidou, 2009; Koulaidis, 2007). Consequently, teacher-centered classes come up to lose value against modern learning frameworks which are characterized by connectivism, electronic, mixed and collaborative learning through the use of digital tools and the development of digital skills in student-centered classes.

What is more, ICT with the utilization of digital tools, when implemented constructively and not in a procedural way, can upgrade the teaching method on a learning and communicative level too (Underwood, 2009). Thus, the digital tools are regarded as "mind tools" (Kinigos & Dimarakis, 2002) which can expand human's mind horizons (Mpikos, 1995) in more than one field as they are expanded to various courses, aspect that changes the teaching reality tremendously (Diofados, 2013: 28).

Need for innovation at the subject of Music in Primary Education

Although our society is flooded with digital programs and online applications, in the field of Art courses and Music especially teachers maintain a cautious attitude towards the contribution of ICT to the learning process. This is due to the lack of their experiential and appropriate training (Haydn & Barton, 2007) and due to the legal teachers' right for optional application of ICT in the classroom which results easily in their reluctance (Oldfield, 2010).

However, New Technologies can be a great tool for students to acquire knowledge by themselves (Koulaidis, 2007) at today's modern school and as far as Music subject is concerned, a new practice should be adopted as pupils are invited to express themselves creatively and by using a variety of tools during the course.

So, providing creative, enjoyable and easily applicable teaching activities the supportive use of ICT will help teachers to create a playful class-atmosphere for students who will be able to understand the cognitive object more deeply and effortlessly in that way, by their active participating in the learning process and -at the same time- their developing soft skills and digital literacy, qualities that are necessary in the 21th century (Eurydice, 2009).

Principles and methods of teaching in the school subject of Music

The combination of the Music course and the use of ICT presuppose collaborative learning and a teacher who is both supportive and a Mentor to his students in the school class (Odam & Patterson, 2000:35). If these are ensured, ICT can:

- face the difficulties encountered in a traditional teaching course of Music
- enrich the Music course (Sharp, Potter, Allen, Loveless, 2000) with: digital recording and partiture, audio production-audio paths, image-video, digital narration, concept maps, e-books
- enhance both teacher's and students' creativity
- develop acoustic and musical skills
- ensure the interaction of participants which is vital in Art education (Buffington, 2008)

Application of m-scripts (digital teaching scripts) in two classes of Primary school

The usage of m-scripts at teaching Music can have a great impact on students' development. The m-scripts have a specific frame and consist of activities which follow one another in order to help students comprehend better and in detail the goals of a Music lesson in class.

Nevertheless, a teacher doesn't need to be an ICT-expert to use m-scripts and digital tools. He just needs to have basic knowledge of how to use a computer. Thus, m-scripts can be used easily by everyone, either being an innovator or a skeptic one, at the teaching practice.

In the long run, in the new educational reality that constitutes exploratory, collaborative learning, student-centered practices, innovation, creativity and digital teaching, the m-scripts with:

- ❖ clearly defined goals and form
- ❖ short chained-activities and
- ❖ flexible character
- ❖ can give the Music course innovative characteristics. This is what this research work suggests.

Methodology of research-work

Research purpose, type of research, research techniques

In every research, the research purpose recommends the best methodology for collecting the appropriate data-information (Glesne, 2018) so as to leap to useful conclusions. This work's research purpose is to explore the additional abilities brought about by the use of ICT to the students of a 5th and 6th grade of a Primary school in terms of assimilation of musical concepts through m-scenarios in the teaching process. So, qualitative research was selected with the use of a case study as the most suitable one because the researcher seeks to find in detail why and how something happens (Yin, 2008). The investigator aims to investigate the relationship between a cause (the usage of ICT) and a result (innovative teaching model for Music) in a field work (class of Primary school).

Research questions

Moreover, the research questions that have arisen to fulfill the above goal and have enlightened every aspect of the investigated topic (Creswell, 2010) have been:

1. *How do ICT support the teaching-learning process in the Music course through m-scenarios for the 5th and 6th grade of a Primary school?*

ICT provokes reframing the teaching class and reality. Thus, this work aims to locate the changes that are brought about to the teaching of Music from planning the lesson to its implementation (in class) and its evaluation in a Primary school class.

2. *To what extent do ICT, as a supportive teaching method, constitute the most effective assimilation of the important concepts of the Music course?*

This research investigates which ICT characteristics facilitate the teaching of Music the most. Specifically, it is investigated how theory is combined with action in the frame of collaborative learning (Elliot, 1995) as far as teaching Music is concerned.

3. *How does the factual supportive use of ICT in a lesson plan in the form of a m-script formulates innovative teaching methods?*

Nowadays, although the majority of teachers acknowledge the value of ICT to the teaching and learning, they seem reluctant to use it in practice. This work shows how the m-scripts, as a paradigm shift of the supportive usage of ICT, tend to form an innovative teaching method for the subject of Music in the two last classes of a Primary school, tempting the teaching community to adopt it.

The significance of the research

The importance of a research suggests why there is need to carry it out and reveals its contribution to the scientific knowledge that already exists and to the acquisition of new, "open", useful knowledge. Thus, the significance of this research lies both to the fact that ICT- value to the teaching hasn't been investigated in depth at the school subject of Music at Primary school and to the fact that research-works including activities for planning and teaching Music with the use of digital tools haven't been carried out adequately so far.

Therefore, the significance of this work lies to:

- suggesting teaching Music by taking advantage of the supportive use of ICT
- upgrading the students' role who are put at the centre of learning process
- reinforcing the teachers' role who are professionally developed
- tempting teachers to reflect outdated teaching-centered methods
- suggesting innovative, creative, playful teaching activities through m-scripts for teaching Music
- developing soft and mind skills through ICT and digital tools in a collaborative learning environment which gives opportunities for investigating information

Sampling, sample, characteristics of sample

Intentional and easy sampling without possibility was chosen as the researcher chose a sample to which he could have easy access (Tsorbatsoudis, 2016:206). So, the sample of the research consists of the

students of a public Primary school at East Thessaloniki. In particular, 13 students of the 5th grade and 9 students of the 6th grade took part in the research. Moreover, a Music teacher participated in the research as the conductor of it.

Research tools

The researcher selected the most suitable tools in order to collect the most appropriate information which would lead him to useful, new knowledge. Therefore, the following qualitative and quantitative tools were used as data collection tools:

- M-scenarios (m-scripts)
- Questionnaire
- Interview

According to Scholtz (2005), Arts should be taught with the use of New Technologies via ideas and values. Thus, learning derives from questioning teacher's authority and perfection and by focusing on building strong bonds among students. In that way students are inspired to cooperate, search for information as members of a team, have fun, have a saying for the frame of learning and gain useful knowledge. All the above are achieved by the usage of m-scripts. Therefore, two (2) m-scripts have been created for this research and have been used at the 5th and 6th grade of the Primary school-sample.

As far as the questionnaire is concerned, it was used as a research tool at this work since it can provide valuable information by checking numerous factors in a quantitative way. Here, two appropriate questionnaires have been used for the students of the 5th and 6th grade which have been formed according to the sample's characteristics and to the type of data that the researcher wishes to gather.

Finally, as for the interview, it was chosen as a research tool because "it gives you access to the interviewee's mind" (Cohen & Manion, 1994: 374) and the interviewees can speak freely about their opinions, feelings and experiences (Robson, 2007).

Needless to say what can easily be estimated which is that a research triangulation has been conducted at this work to assure that plenty of useful data would be gathered and to reinforce the accountability of them so as to be led to accurate, important deductions

Results – Deductions

Numerous deductions have arisen through this research that can lead everyone to useful self-reflection and helpful knowledge.

The supportive role of ICT in the educational process

ICT sets the teacher free from sterile, passive teaching methods and transforms him into an organizer, teaching facilitator, Mentor who combines successfully the physical and digital environment of a classroom by using digital tools that can develop fully students' cognitive, social and emotional skills.

The teachers are encouraged by this innovative teaching method to:

- ✓ create and use class-activities which tempt students to think critically
- ✓ work actively and collaboratively with their students in a search of new information
- ✓ develop digital skills in a playful-fun learning environment
- ✓ evaluate themselves, their teaching practice and its results

The m-scenarios as an element of an innovative teaching method

The m-scenarios-paradigm facilitates the teaching process by giving the students the chance to:

- ✓ follow their personal learning rhythm
- ✓ to collaborate
- ✓ to understand better new knowledge by searching individually and collaboratively for information
- ✓ to develop useful skills - soft, mind, digital, social- for a lifetime
- ✓ to evaluate and be evaluated

The teachers put their students' interests and needs at the centre of their teaching plan and set as their goals the students' conceptual understanding, the generation of innovative ideas, the creativity and last but not least the pupils' self-regulated learning.

The students' and teachers' upgraded role

By adopting this innovative teaching practice, the teachers are able to create the appropriate conditions for taking advantage of the supportive use of ICT in order to help pupils discover new knowledge through new learning approaches and tools.

Therefore, the students:

- get to know new digital tools and develop digital literacy

- become more creative via them
- are tempted to innovate with new ideas without being afraid of making errors
- take initiative on a personal and team level by feeling safe to do so
- “build” new, useful knowledge in a playful way
- try new ways and tools by evaluating the results of their work and in the long run by evaluating themselves in a routine
- obtain soft skills and develop valuable mind, social and emotional skills for a lifetime
- As for the teachers – researchers, according to this work, are able to:
- create student-centered classes
- use the class-time better and take good use of the chances for enriched learning
- acknowledge how valuable ICT can be for their teaching and are tempted to be educated themselves too about New Technologies and digital tools, so they are professionally developed
- dare to innovate by creating new, fresh, up to date learning environments for their students
- organize, plan, work collaboratively together with their pupils and lead them to useful, “open” knowledge
- visualize together with their students goals in common and change their teaching culture
- re-think and reflect their teaching methods and get used to evaluating them

Consequently, teachers renounce the traditional teaching model that puts teachers on top of the class as experts and obtain a new, teaching practice which develops equal relationships among the members of a school community, activates students to participate in the learning process and develops useful soft and digital skills for everyone.

Lifelong development of skills

Education is an integral part of society and should play a vital role in developing the suitable skills and obtaining the useful knowledge for the students who become the future, active citizens. The integration of New Technologies in the educational field can contribute to conquer the above and specifically to get and develop “the skills of 21st century” and the “4Cs”.

When we refer to 4Cs, we mean:

- Collaboration
- Critical thinking
- Creativity
- Communication

So, the 4Cs have to do with skills that help both teachers and students to develop themselves fully and to meet their needs in a constantly changing learning and social environment.

Specifically, through this work students by their participating in the m-scripts and by using digital tools learn how to cooperate and search for information collaboratively in a team which sets particular goals (collaboration)

Furthermore, students look for data that they always check critically, analyze and compare so as to reach conclusions (critical thinking).

Moreover, by using digital tools they are capable of combining different forms of learning and information in a fun way and are being tempted to develop their creativity (creativity).

On top of that, teachers -by practicing this innovative method- with the use of ICT can combine the school subject of Music with plenty of other school subjects in a creative way, such as Language and Literature, Geography, Computer Science and share their ideas about them (communication).

Therefore, Multiple Intelligence is developed and students “learn how to learn” with the help of teachers-Mentors that inspire them to communicate ideas and feelings, collaborate, think critically and create innovatively by taking initiative and trying new methods and tools while getting used to evaluation.

Instead of a conclusion

ICT with a supportive character when used in the school subject of Music can:

- enrich the teaching process and enhance the educational activity
- contribute to a better understanding of the teaching concepts by students

- upgrade the teachers' and students' roles
- improve the school-atmosphere and class-climate
- develop useful skills for a lifetime

Further analysis and future exploitation of this work

What mainly makes innovative this work is that neither the supportive character of ICT at the Music course of a Primary school has been studied in depth nor specific classroom-activities using digital tools have been planned and presented yet.

So, this research comes to suggest constructive changes to:

- the way Music is taught with the usage of ICT
- the way students are treated as far as their role in the learning process is concerned which is far more active now
- the way the teachers plan and do their lessons who are now professionally developed and diverted into Mentors and learning facilitators for their students
- In the long run, this work-research can play the vital role of the starting point for all the stakeholders as it:
- tempts to re-think and reflect old fashioned teaching models
- suggests innovative teaching practices and creative, playful activities that teachers can form in order to enrich and finally use in their classes
- reveal an innovative teaching model which by making good use of ICT sets the students at the centre of the learning process
- can make other researchers too to think critically and do researches as far as the teaching of Music course is concerned with the use of digital tools
- can motivate researchers to investigate thoroughly the reasons why teachers do not adopt ICT and digital tools in their teaching plans although they regard them as useful and valuable for their students' holistic development and ultimately recommend ways of effective usage of New Technologies in the teaching routine by facing any fears that may exist on behalf of teachers

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STEM

STEAM APPROACH WITH THE TITLE: BUILDING MY OWN DAM

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ABSTRACT

This paper describes the STEAM approach to Kindergarten, entitled: "Building my own dam". Its aim is to demonstrate that in a student-centered program with an interdisciplinary character, such as that of primary education, which takes into account the individuality of each child separately and his experiences and is based on the theory of social constructivism, the STEAM program with implementation of the mechanical design process can be included in its schedule. The specific learning plan has the form of a work plan (Project) and has an interdisciplinary character since it extends to all cognitive fields of the Interdisciplinary Unified Curriculum Framework (DEPS, 2003) for the Kindergarten. At the same time, it utilizes the "thinking routine" method proposed by Harvard University (2016) (Project Zero - see, think, wonder) and the digital Active Presenter application. In addition, it adopts assessment in all phases of the learning processes (initial - formative and final) with open-ended questions that help the student to develop self-regulation by identifying his / her mistakes and looking for ways to correct them on their own, drawing important data from them.

Key Words: work plan, STEAM approach, mechanical design.

INTRODUCTION

With the entry of the 21st century and the continuous development of technology and science, the need for specially trained citizens in engineering, mathematics, technology and science arose. In other words, the need was becoming demanding for an education known as STEM (Science, Technology, Engineering, Mathematics). The term was first coined in 2001 by Judith Ramaley, director of the National Science Foundation's Department of Education and Human Resources, who tried to describe a curriculum that covered the above areas. However, the attempt to implement this program did not have the expected positive results and acceptance by the students and was abandoned. However, in 2009 the term returned to the forefront as an attempt at a now unified, educational approach in the fields of science, technology, science and students (DeJarnette, 2018) and this integration seemed to be the key to its successful implementation with result in the rapid introduction of the program in schools, even in an experimental stage.

STEM education is therefore a didactic approach where the field of science (S) aims at acquiring knowledge about the natural world and the principles that govern it, the field of technology (T) refers to solving problems of a technological nature, mathematics (M) aim at the solution of open problems that are directly related to everyday life and engineering (E) tries to provide answers to issues that originate through society and aim at improving the living conditions of citizens (Katsavou, 2017). In conclusion, we would say that all the aforementioned fields of science, technology and mathematics aim at the familiarity with analytical thinking and the ability to teach children to argue about what they do (Vologianni, 2021).

To the term STEM was added the art (Art) too, a little later because it was found to make teaching more attractive and lead to better learning outcomes (Henriksen, 2014). Also, the important role of art has been proven in students with an immigrant profile but also in children who come from a low socio-economic environment. Art aims to enhance creativity and the cultivation of emotion, elements that stimulate the interest in learning of all children and especially those who come from deprived socio-economic and cultural environments. Thus, the term STEM was formed into STEAM (Liao, 2016). Later, literacy was added to the same term, and it was converted to STREAM as the ability of functional literacy was found to be particularly important. That is, the student's ability to read and understand what he / she reads (Nuangechalerm, Prachagooi, Prommadoon, Juhji, Imroatun & Khaeroni, 2020). This ability enables the individual to gather information in order to use it for himself/ herself, to share his/ her thoughts with others and to justify his views and decisions. It makes the

students, in short, ready to help both themselves and those around them (Nuangechalerm et al., 2020). Through the use of texts of various kinds (scientific texts, literary, narrative, descriptive, etc.) students are helped to understand the complex world that surrounds them, they learn to state their arguments based on scientific data, to express messages that are not so obvious in the texts and formulate questions to be explored. In fact, the use of literature in the STEAM approach can help students to approach complex and difficult concepts in an easier way (Nuangechalerm et al., 2020).

The STEAM approach to Kindergarten

The field of primary education should provide children with all those conditions for their involvement in fields of science for two main reasons, because first through their experimentation with scientific experiments children come into contact with the natural and social world and why second, they cultivate at the same time all the other cognitive areas included in the Curriculum of the Kindergarten (APS) (such as language, mathematics, study of natural and man-made environment). At the same time, cultivating their natural curiosity, students of this age come in contact with the natural world, learn about it, about the laws that surround it and acquire the appropriate skills trying to understand it (Taylor, 2016).

Through play, which is an integral part of learning in Kindergarten, children cultivate their physical and cognitive abilities, experiment and engage in creative activities that make sense to them. Consequently, a STEAM program can be approached from the perspective of the game and give children the opportunity to learn, to observe, to experiment and make assumptions, to formulate questions and ask answers with scientific arguments (Taylor, 2016). In the field of preschool education there are all those guarantees for the implementation of STEAM programs since the learning, in order to be more digestible to the children, is presented through playful experimentation and verification and digital web 2.0 tools are used, a fact that acquaints the little students with the use of New Technologies, which is an essential skill for the citizens of the 21st century. In addition, it cultivates the four Cs that is critical thinking, communication, collaboration and creativity with the ultimate goal of making students with developed thinking and critical thinking.

In addition, STEAM training encourages teamwork by enhancing the ability of cooperation, interaction and interdependence between its members, without this meaning that it does not presuppose individual autonomy and responsibility in the completion of the activities of any teaching approach (Taylor, 2016).

Introduction of engineering in Kindergarten

According to Stubbs & Myers (2016) engineering has a direct application in the field of Kindergarten as children on a daily basis explore situations and solve problems through collaborative practices and group discussions, try to make constructions and provide solutions to problems exactly as they do engineers when called upon to answer a construction problem and thus improve the daily lives of citizens. The same authors argue that the introduction of engineering in preschool education can be characterized as an ideal way to familiarize children with the concept of mechanical thinking through the solution of open problems capable of more than one answer, through testing and wrong and all this in a descriptive context that makes sense to them.

During the familiarization of children with the process of mechanical thinking it is necessary to provide support for the collection of data, which will help in the first stage of experimentation, to give the opportunity for paper design of the original thoughts and their re-formulation when children perceive omissions and failures, to provide materials and to provide additional information where necessary.

The effort of engaging children of this age with forms of engineering is directly related to the STEAM approach because they are encouraged to solve situations that are directly related to everyday life, to give new form to designs that have simply been imprinted on a piece of paper looking for new ways of thinking and giving them new ideas that they may not have initially thought of, to collaborate in order to be able to proceed by cultivating their critical thinking while projecting the common good.

This work plan, which takes the form of a construction plan, is built around a central axis that connects the four fields: science, engineering, art, technology and mathematics, aiming at the holistic development of knowledge. It utilizes the model of mechanical design that concerns this age group and consists of seven main phases, which the group must follow. These are: 1) I identify the problem, 2) I ask, 3) I imagine, 4) I design, 5) I create, 6) I try, and 7) I demonstrate as well as the Harvard

University Project Zero method: I see, I think, I wonder (Harvard, 2016). It also utilizes web 2.0 tools such as "Active Presenter", "Wheel of Names" and "Bubble us".

The learning objectives of the work plan with the STEAM approach in the individual thematic areas are the following:

- Child and communication: children become able to describe and narrate by participating in discussions with arguments and enriching their functional vocabulary
- Child, body, creation & expression: to experience the construction plans experientially, to observe them and to implement them based on scientific criteria
- Child, self & society: experiment with constructions and understand the role of technology in the various social challenges
- Child & science: to develop technological design skills and those considered necessary for the execution of a scientific construction, to make comparisons based on criteria and to make diagrams
- Cultivation of attitudes: to cultivate their empathy, cooperation and ability to adapt to new experimental situations.

The specific work plan extends in three main phases, each of which is divided into sub-sections: a) in the planning of the action by exploring the prior knowledge of the children and the formulation of research questions following the methodology of "thinking routine", b) in field research, which includes the search for answers to children's questions through the implementation of engineering design processes and integration activities, aimed at consolidating understanding, disseminating good practices and c) self-assessment-oriented evaluation with open-ended questions.

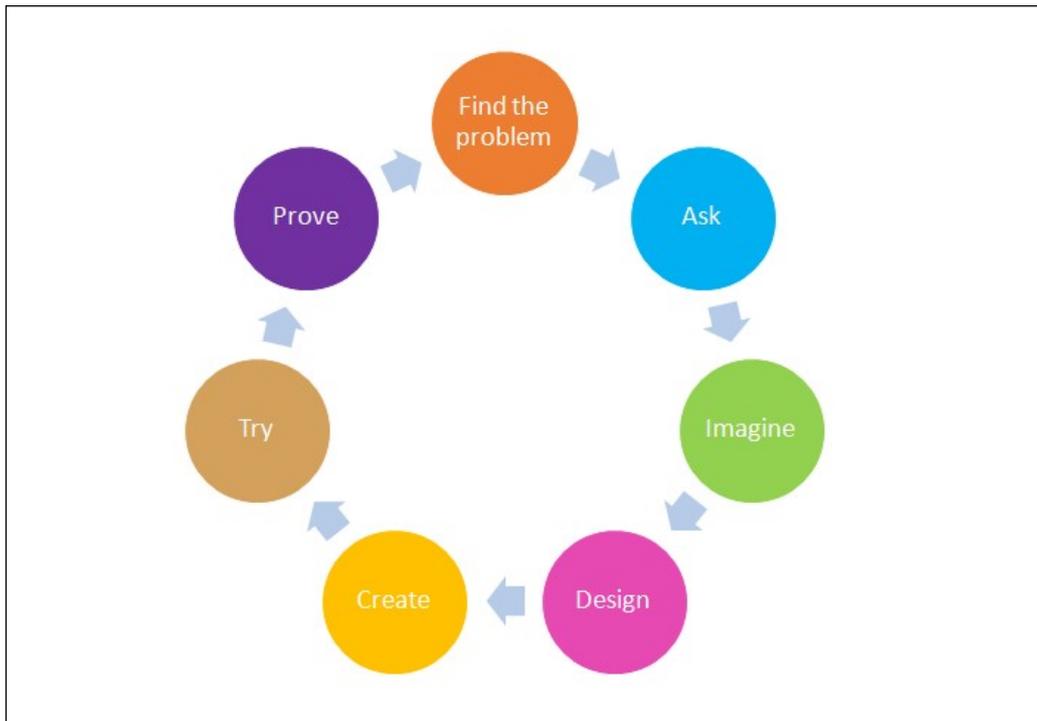
The design skills of the work plan relate to the acquisition of 21st century skills (the four Cs) that include the above elements (cultivation of critical thinking, communication, collaboration and creativity) through the specific construction plan. Still, the work plan focuses on productive learning through literature, familiarity with social life skills, strategic thinking, and the implementation of design-based constructions (Stubbs & Meyers, 2016).

Main subject

Natural phenomena are a source of inspiration for reflection and action for preschool children, such as the rain with which they often come in contact and is a natural phenomenon of observation and experimentation for all that positive and negative feelings and situations that it can bring (e.g. drought, intense storms, floods, etc.) and which occur more and more often on our planet due to climate change. In view of the autumn season, it was decided after discussion, by the plenary of the class to deal with the floods that can bring great disasters, looking for a solution to deal with them. It was decided, through group voting, that the children should be involved in the construction of dams that are a scientific response to this phenomenon and offer a solution to a growing part of the population that every year needs to move from their homes due to floods and extreme natural disasters.

The course of the work plan concerning the construction of a dam with the STEAM approach extends to three main phases with student-centered activities that familiarize children with science, technology, engineering, art and mathematics. It is also related to the literature which gives the initial impetus for the introduction of the students to the subject to be negotiated. The central part of the work plan is occupied by engineering, with which children come into contact mainly through the process of mechanical design, the model of which is as follows:

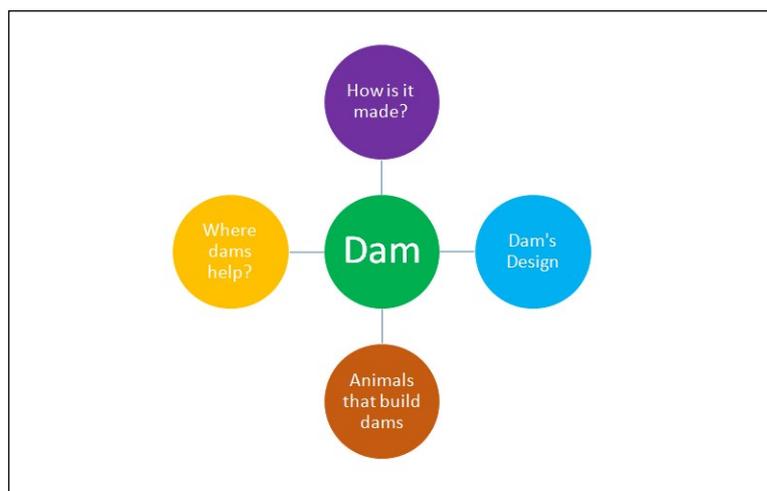
Figure 1
Mechanical design process



In particular, the first phase of action planning refers to the emergence of children's prior knowledge. The occasion is provided by the reading "I make the lake from the beginning", which is a work of the children themselves from a previous activity on the occasion of the autumn season and refers to a lake from which all the animals of the forest drank water a while ago. For a long time, due to the heavy autumn rains, it overflowed so that no animal could approach it. But apart from the fact that the forest animals could not drink water, many of their nests were filled with water so that they are no longer habitable. The animals were in despair... The solution was given by a group of beavers who, like good engineers, worked day and night, creating a dam, making the lake accessible again for all the inhabitants of the forest.

Reading as it is made by the children themselves with its retelling provokes them to spontaneously express their thoughts and questions on the subject of dam construction. The teacher records their verbal references using the brainstorming method and then creates a digital mind map with the "Bubble us" application, which presents the children's thoughts divided into common axes (dam construction materials, people who specialize in construction there, way of construction etc.).

Figure 2
Questions for brainstorming



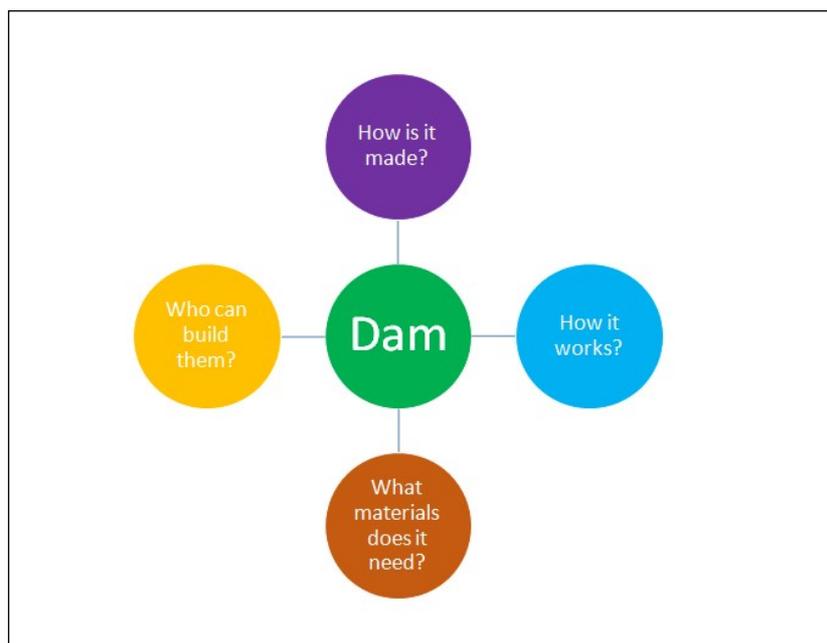
Also, utilizing the method of the routine thinking - project zero (I see - I think - I wonder) the teacher creates homonymous columns, which are the first reflection of the views of the young students.

Table 1
Routine thoughts

Thought Routines		
I see	I think	I wonder
e.g. I see a lake in the forest with a lot of water	e.g. that animals cannot approach to drink water because they will drown	e.g. why does the quiet lake of the forest become so wild and full of water?

Then, the children are presented with a more realistic depiction of the dams with images through the internet, from dams in the region, in our country and in the whole planet (dams that hold water). The depiction of reality triggers a re-semi-structured debate that follows the same methodological approach. In other words, the children's knowledge emerges with the method of the brainstorming and then, the reports are grouped in common axes, which are presented in the form of a histogram in the plenary of the class.

Figure 3
Mental map



The digital “Bubble us” application can be used again to create the concept map. The two concept maps are presented in plenary and compared. The children find that the second mental map contains more information that helps to further explore the subject.

In addition, the "routine thoughts" method is applied again (I see, I think, I wonder) to detect the change in the way of thinking of the children after the pluralism of data and reports on the subject. In other words, a new table is created where the young students are seen, what they see, think and wonder. With the above comparisons, the first phase of the work plan ends.

In this second phase of the action, children are presented through comics and the digital application “Active Presenter” material that provides information for the creation of dams and gives construction ideas to children. Students are then asked as a first step in understanding to group images with types of barriers and select their possible construction materials. The presentation is made by the small engineer of the application and the grouping activity by the Drop Area option. Images can be selected from the website https://commons.wikimedia.org/wiki/Main_Page. In this phase, the first part of the mechanical design is introduced (Detected the problem).

In the next lesson, the second part of the process of the engineering plan (Ask) is introduced, during which the children are asked questions to investigate whether there is an expansion of their knowledge about the dams after the above-mentioned activities. The teacher records the answers and makes a first reference to the materials with which a dam can be constructed.

The children are then divided into random groups through the digital “Wheel of names” application and after discussing with each other they draw or "write" on A4 sheet of paper the materials they will need to build their own dam. This phase is the next part of the mechanical design (Imagination) during which the students, after working in their groups, present their ideas about the construction plan they decided to make, in the plenary of the class where through a semi-structured heterogeneous dialogue. Then, after thinking and consulting its members, each team makes the final decisions about the materials that will be needed for the construction. The teacher helps in the outcome of the dialogue with targeted questions and demarcation of the discussion. Also, each group is careful to choose different materials to have different mechanical drawings and therefore results and in the same way helps to enter the numbering with regular numbers (1st, 2nd, 3rd etc.) but also the calculation of all the materials that each team will use. Care is taken to ensure that all teams have the same number of materials.

In the next stage of the same phase, the design of the dams is first attempted on paper. In other words, the children plan in steps (repeating the regular numbers) the construction process of the dam depending on the materials they will use. They paint, for example, the plastic container they will use, the water bottle, the wood, the bricks, etc. and number them in order of choice. This design is the standard mechanical design they follow. They have the option of course, after consulting with team members to modify their original design and choose other materials.

The following is the construction stage where the children build their own dam with the materials they have chosen following the design and proceed to test it. Initially, the tests are performed in the group and then in the classroom. The teacher with open-ended questions motivates the children to explain each step of their constructive effort. At the same time, he keeps notes in the "class diary" with the course of construction design.

The third phase of the work plan includes its completion. More specifically, the children decide to present the whole course of mechanical design through the "WebEx" platform to the parents / guardians but also to inter-school meetings. For this reason, with photos taken by the teacher from all the individual phases but also with their design projects, they create a Power Point and explain in detail all the steps, the designs they made, the materials they used. They accept questions and learn to give answers by arguing for the choice they made and the course of thought they followed.

The last part of the work plan includes the final evaluation. This evaluation process is carried out with open-ended questions to each group and the answers given are recorded in the "class diary". Indicative questions that can be asked to children are the following:

- Were you able to create a dam capable of holding the water you dropped?
- For how long?
- Did you use the original design you made or did you change your design?
- Do you think the materials you used were what you needed or would you like some other material?
- Did you work harmoniously with your team members?
- Did the plan you made help you to be able to build your dam?
- What made it difficult for you in the whole project?
- What did you like most?
- Would you like to suggest we do some other construction?

Expansion activities: starting with the mechanical design of dams, the issue can be extended to the water cycle in general and an attempt can be made to build watermills that can harness the power of water to produce electricity that is environmentally friendly. Still, the issue can be extended to the role that water plays in modern times, to raise concerns, such as what would happen if the water ran out for an hour, for a day? What should all citizens do to save water reserves on our planet, etc.

CONCLUSIONS

This work plan attempted to demonstrate that the STEAM approach can be implemented in Kindergarten. With student-centered activities that give the leading role to the children themselves and with appropriate support from teachers they can build new knowledge on their own based on their previous experiences and using collaborative learning to walk independently to new discoveries. Although engineering is not part of the Curriculum (APS, 2003) for Kindergarten, however, we can argue that through it, children are able to experiment, experiment, design and use this plan, which they can capture on paper or digitally, to proceed with constructions by evaluating their own effort and reaching general conclusions. Furthermore, the integration of knowledge proposed by the STEAM approach helps children from this age to approach knowledge as an integral whole that runs through all fields of knowledge and to understand that as citizens of the 21st century they need to use all their abilities to overcome obstacles and provide solutions to the problems of everyday life.

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PILOTING ROBOTICS & STEAM IN THE GREEK CURRICULUM

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ABSTRACT

The present paper deals with the pilot introduction of Educational Robotics and STEAM in Primary and Secondary Education in the context of 'Skills Labs' (Ministry of Education and Institute of Educational Policy) which was facilitated during the academic year 2020-2021 in selected Elementary and Junior High schools across Greece. Eduact, a non profit organization, undertook the production of the educational material, the provision of the necessary equipment to the schools and the training of the participating teachers in collaboration with the Institute of Educational Policy.

For the final, overall evaluation as well as extraction of research worthy findings from the pilot, tools were developed and utilized, based on the Teacher's Guide for Descriptive Assessment and the Assessment Scaffolding Tool of Students' Competencies and Skills for Teachers developed within the European Project ATS2020 (Assessment of Transversal Skills 2020 - Erasmus +).

Key Words: Robotics, STEAM, life/soft skills, curriculum

INTRODUCTION

In modern educational contexts, an imminent need arises for the implementation of updated educational practices and programs that will be directly related to learning areas both from the field of exact and social sciences alike. The redefinition of the eight core competences - knowledge, skills and

attitudes required by all for personal fulfillment and development, employment opportunities, social inclusion and active citizenship - on which European education policy should be based as we approach the end of the first two decades of the 21st century, is a case in point. Which are they? Literacy competence, STEM (Mathematical competence and competence in science, technology and engineering), Digital competence, Multilingual competence, Personal, social and learning to learn competence, Citizenship competence, Entrepreneurship competence, Cultural awareness and expression competence.

Pedagogical starting points

The European Council's positions on education as published in the Official Journal of the European Union (2015, C 172/17) emphasize the need to cultivate digital skills in preschool, primary and secondary education on the one hand, and their link to critical and creative thinking skills on the other. In the same vein, in UNESCO's 2030 Agenda for Citizens' Education, digital skills are a key pillar of education, a key discovery learning tool.

In surveys of the Organization for Economic Cooperation and Development and the priorities set by the Pisa framework, polarizing is avoided, dilemma positions for or against the use of technology media and the qualitative characteristics of children's engagement with digital media in the learning environment emerge. After all, children are natural speakers of digital language, they are "digital natives" as Prensky (2001) states.

Necessity and pedagogical focus

The answer to whether it is necessary to integrate and teach Information and Communication Technologies (ICT) in education at all levels lies in the skill sets that are cultivated, the so-called 4Cs (Critical Thinking, Creativity, Communication, Collaboration).

Information and Communication Technologies are used as a pedagogical tool rather than a pedagogical target and are part of digital literacy skills. This produces interdisciplinary ways of learning - as opposed to those that lead to sterile knowledge - and which are more open to students' creative initiatives. In addition, student-friendly applications are required, with convincing implications of the practical usefulness of the knowledge, skills, attitudes and appreciations on offer. The aim is to approach various subjects with fun and imagination as opposed to the strict formalistic traditional teaching method and always with a scientific approach to the subjects in order to develop higher intellectual functions. The student is asked to become creative by having a virtual presentation of the material, to be able to discover and consolidate knowledge through reflection, to be a co-creator of the cognitive process through the fuller activation of the imaginative symbolic process of the brain. The acquisition of knowledge through process simulation aimed at the education and development of critical faculties can be greatly assisted through participation in educational programmes designed to strengthen and cultivate computational intelligence. Educational Robotics (ER) is an innovative teaching tool that transforms the classroom into a dynamic learning space. Several studies report that EP activities have positive effects on skill development. Its introduction into the educational process is based on innovative approaches-strategies that require the accumulation of knowledge through cooperation and social networking, the formation of groups and the active participation and cooperation of all those involved, the achievement of individual and group goals, the development of complex (individual and group) authentic activities, the assumption of distinct roles, communication (synchronous or asynchronous), and the access and use of learning material.

Finally, the learner, who is at the heart of this process, will be supported pedagogically and educationally through an integrated methodology for the pedagogical exploitation of the programme.

GENERAL EDUCATIONAL OBJECTIVES OF THE PILOT ACTION

The aim of the pilot action is to introduce in the organization and operation of primary and secondary education units - on a permanent basis, in the compulsory timetable - workshops for experiential and discovery learning and the cultivation of life skills/soft skills, digital literacy and other modern skills, which will enable pupils to make better use of knowledge and respond to the challenges of an ever-changing environment.

The objectives of the pilot project are fully aligned with the framework philosophy of the skills workshops and, in particular, with the objectives of the field "Create and Innovate - Creative Thinking and Innovation" and the field "STEM/Educational Robotics" as described in the Government Gazette

no. 2539 (24-07-2020) and the decision of the Ministry of Education and Science on "Curriculum Framework for Skills Workshops for all types of schools, Kindergartens, Primary Schools and High Schools" (No. 94236/GD4, Athens, 29-07-2021).

METHOD OF IMPLEMENTATION

Object of the action

- The implementation of a Robotics educational program with integrated lesson plans and worksheets, which will promote the cultivation of exploration and collaboration skills among students and, at the same time, meet specific pedagogical and educational objectives.

- The training of school teachers. The training will concern the teachers who would participate/implement the programme and, if required, all of them, through an e-learning platform, in a modern, but also asynchronous way. The training was structured along two axes:

- 1) training on the use of the programme in the educational process,
- 2) the training in the use of robotics in the course of the training programme, in order to better assimilate the concepts of 'robotics' and the subject of the training scenario, and to make more effective use of the time available

Pedagogical and Educational Foundation of the Programme

Internationally, educational processes are dominated by the concept of educational modernisation in order to bring schools into line with the requirements of modern economic and social reality. One of the main objectives of this effort is to create citizens capable of integrating into the information society. Educational Robotics (ER) is an innovative teaching tool that actively engages students in the learning process and aims to enhance and develop high cognitive and problem-solving skills (Blanchard et al., 2010). Several studies report that EP activities have positive effects on the level of cooperation among students, the development of critical thinking and problem solving skills (Petre & Price, 2004; Norton et al., 2007, Castledine & Chalmers, 2011), metacognition and computational thinking (e.g. La Paglia et al., 2010; Benitti, 2012). They also report that EP enables the use of classroom research (Williams et al., 2007) and learning a programming language (Nourbakhsh et al., 2005).

The proposed approach encourages learning through participation. The educational scenario and the educational activities have the objectives to: promote creativity and imagination, stimulate curiosity, promote different types of expression, encourage initiative, foster group learning and group activities in general

Educational foundation

The pedagogical perspective mentioned above requires an educational design for the development, implementation and application of the teaching tools, which is based on a number of assumptions and commitments.

Educational objectives and teaching procedures:

In terms of objectives, the transition is attempted from the traditional model of trying to transmit information in the form of new knowledge, to the teaching processes, which are related to the active constitution of new mental representations and skills corresponding to the different teaching objects presented through the programme. Through the educational environment, the aim is to maximise the potential for developing individual strategies for the active discovery and mental construction of knowledge. In order to serve the above, the proposed teaching procedures are dictated by: The effort to maximize the interest and activation of not only the cognitive but also the mental and emotional powers of the students. This effort is served by the interdisciplinary approach to the teaching objects, since where this is permissible, the demands of the educational process from the students do not have the traditional form of school teaching objects but are constituted with the aim of producing combined knowledge.

The use of multiple teaching media and tools, such as:

The interdisciplinary approach to teaching objects, as where this is permissible, the demands of the educational process from students do not have the traditional form of school teaching objects but are formed with the aim of producing combined knowledge.

Search for knowledge in the attempt to solve specific problems.

Formulating research questions and attempting to verify working hypotheses.

Particular emphasis is placed on supporting and enhancing the potential for multifaceted collaborations with the aim of deriving maximum learning benefit from the processes of social-teaching interaction. In order to make this possible, the learning environment enables, enhances or 'forces' cooperation. That is: The educational programme, in addition to the individual involvement of students, encourages cooperation between them, with the aim of jointly tackling problems and exchanging ideas and experiences.

Collaborations can take place in different circumstances, so that different types and levels of needs can be met. In particular: Students can organize collaboration projects from the outset. Pupils can start from the beginning to initiate projects from the outset. Teachers can monitor pupils' work and intervene when they consider it necessary in order to help the children's activity.

Analysis of the current situation

In recent years, various teaching methods have been tested in primary education in subjects related to science and linked interdisciplinary with other subjects. The lack of visual and tactile material was one of the biggest problems for pupils, as it was difficult for them to understand functions and concepts in science and mathematics, relying only on texts and words on a theoretical background. As a result, their active participation is prevented and they are passive recipients of new information. The application of educational robotics provides a solution to what has been mentioned, to a high degree. The student has the role of a researcher and is asked to prove and observe scientific theories, moving from theory to practice. Through a collaborative learning environment, the student actively participates in a fun and creative context. The interdisciplinary - interdisciplinary educational robotics workshops aim to understand and study basic concepts of science, engineering, robotics and programming and aim to approach the concepts of science in an experiential way, while developing computational thinking, which is a key concept in computational science.

Yasar & Landau (Yasar, O., & Landau, R., 2003) argue that Computational Science can be defined in a variety of ways. It refers to the interdisciplinary combination of computational techniques, tools and knowledge needed to solve contemporary problems in science, education and teaching/pedagogy, the use of computational simulations by the sciences, and the research and development of computational skills and tools needed for applications.

Student-centered learning and teaching, supported and adopted in workshops, plays an important role in enhancing students' motivation, self-assessment and development of metacognitive skills, and active participation in the learning process.

The implementation of student-centered teaching models: respects the diversity of learners and caters for their varied needs by adopting flexible learning orientations, considers and uses different modes of delivery, depending on the situation, uses a variety of pedagogical methods in a flexible way, regularly evaluates the ways of delivering and applying pedagogical methods and intervenes in a regulatory way to improve them, regularly evaluates the quality and effectiveness of teaching work, enhances the learner's sense of autonomy, while ensuring that the learner receives adequate guidance and support from the teacher, promotes mutual respect in the student-teacher relationship.

The aim of the educational programme is an interdisciplinary approach - combining the sciences of physics, technology, mathematics and engineering, the interdisciplinary connection with the other subjects and experiential education through a teamwork environment. At the same time, skills related to ingenuity, designing algorithmic & programming patterns and demonstrating team spirit are developed. Contemporary trends want education to be learner-centred. Learning is transformed into an active process of "discovery" and is based on individual motivation more than on memorization of facts. The role of the teacher is changing. It ceases to be the sole source of knowledge and becomes more consultative and guiding, and the need for educational programmes that encourage and enhance exploratory learning, creativity and collaboration has been recognised.

TRAINING OF TEACHERS

Means of training and ways of approaching teachers

Teacher training aims to ensure that new concepts are assimilated as widely as possible and used more effectively. To this end, a study of the needs of schools was carried out in order to draw up a programme tailored to the needs of the trainees.

The methodology followed was developed by groups and will be exploited: E-learning platform (e-learning). The training through the platform was conducted in both synchronous and asynchronous formats, during which the pedagogical approaches and the instructional design of the program were presented, a presentation of the challenge of the workshops, as well as instructions/clarifications on how to conduct the workshops. Modern education and knowledge certification. The training was conducted by LEGO® Education Academy certified trainers in a contemporary format through hands-on activities and focus on educational scenarios, classroom instructional utilization.

EVALUATION OF THE PILOT ACTION

Evaluation tools

For the evaluation and final assessment of the pilot action, tools were developed and used, based on the Teacher's Guide for Descriptive Assessment and the worksheets (Assessment Scaffolding Tool of Students' Competencies and Skills for Teachers) developed within the framework of the European project ATS2020 (Assessment of Transversal Skills 2020 - Erasmus+).

These are:

Semi-structured interview for the initial assessment of teachers prior to the start of the pilot action

Semi-structured interview for the final assessment of teachers after the end of the pilot action

Initial assessment teacher's diary (first day of the pilot action)

Teacher's diary for each day of the pilot action

Teacher's evaluation diary (after the end of the training action)

Teacher's observation and evaluation sheet for each pupil individually

Semi-structured interview for the initial assessment of teachers

The aim of the questions of the semi-structured initial interview was initially to capture some information about the teacher (sample data), such as the years he/she has spent in education with children, training on educational robotics and STEAM in general, the educational approaches he/she applies and uses, the way he/she perceives his/her role in education. The teachers were then asked to give an example of the way they teach, with the aim of highlighting the space they leave for children to develop initiative, the way they work with them and the general or specific characteristics of their teaching approach.

The third part was specific to Skills Workshops and aimed to explore teachers' expectations of the workshop they would pilot, the expected outcomes in terms of the dimension it would give to the way children learn, the way the lesson is delivered, the skills they might develop, the overall benefit to the school unit. Finally, teachers were asked to share any concerns they had about the pilot activity, concerns or potential difficulties they thought would arise, such as the inability to meet the objectives, the increased demands of the lesson, the difficulty of children working together, the difficulty of understanding the new concepts, the lack of interest from children, the lack of preparation for the implementation of the workshop, the familiarity with the new technological tools and they had the opportunity to mention advantages and disadvantages of the workshop, along with

Semi-structured interview for the final evaluation of the teachers

The aim of the semi-structured interview questions for the final evaluation was to explore data on the implementation of the workshop, the coverage of the objectives, the characteristics of the material available to the teachers and its use, the adequacy of the training, the difficulties encountered during implementation, and their suggestions for improving the programme.

Teacher's diary

The teacher diaries were intended to be the main tool for observation and evaluation during the pilot implementation. The diaries are divided into three categories: the First Assessment Diary which concerns the implementation of the first workshop, the Diary for each lesson (for each one implementation) and the Evaluation Diary which concerns the evaluation of the workshop and is completed at the end of the course cycle.

The questions included in the teacher journals were selected based on the basic principles that should guide the assessment process, as indicated by research (Black et al., 2003; Black et al., 2010; Black et al., 2011; Harlen, 2005), in particular:

[...] the definition of evaluation criteria based on specific areas related to the approach to the subject matter and the participation of the student both in the development of the educational process in the classroom and in the life of the school in various collective actions [...].

Assessment for learning is carried out daily in the classroom when teachers interact with students as the educational process develops. Observation of students, questions asked by teachers and answers received from students, individual or group work assigned at school or at home, evaluation sheets or written tests, among others, are common educational practices to collect information that will help teachers and students to better assess what learners know and understand, what their abilities and skills are and how they use them

Initial assessment teacher's diary

The initial assessment diary includes 12 questions concerning the preparation for the implementation of inquiry-based learning and project-based learning, the preparation of the lesson, the enhancement of children's interest, the degree of cooperation of the children, the degree of understanding of new concepts, the quality of the lesson (enjoyable, challenging), the ease of use of the material and the percentage of coverage of the lesson objectives.

Teacher's diary for each day of implementation

The teacher's diary for each implementation day contains fewer questions (7) concerning the degree of cooperation of the children, the degree of understanding of new concepts, the quality of the lesson (enjoyable, interesting, challenging), the ease of use of the material and the percentage of the lesson objectives met.

Teacher's evaluation diary

The evaluation diary includes 8 questions concerning children's familiarity with the teaching material, the adequacy of teaching time to complete the topic cycle, the overall degree of cooperation between children, the degree of understanding/assimilation of new concepts, the quality of the lesson, the age appropriateness of the activities for the children and the degree of progress achieved each time.

Observation and evaluation sheet for each student

Alongside the teacher's diary, the teachers who participated in the pilot action were provided with observation and evaluation sheets for each student individually.

The evaluation sheets are structured around the following 5 axes: Way of Thinking, Cooperation and Communication, Learning, Communication, Cooperation, Collaboration, Communication and Communication Skills, Technology which, like the questions included in the teacher diaries, were selected based on the basic principles that should guide the assessment process.

Assessment results

The study of the material gathered through the use of the tools has led to very important conclusions which will be further elaborated.

Initial assessment teacher's diary

Question 1

Open question

Something you would change next time / other comments:

I feel that the whole structure of the course, the educational process, the response of the students was such that I would not change anything substantial.

In general the 1st workshop went smoothly. I would adhere more strictly to the time duration of the individual activities.

Although I chose to do only 6 workshops in the end instead of 6 two-hour workshops, 6 four-hour workshops were dedicated, resulting in time pressure. Perhaps I chose fewer workshops to avoid running out of time.

The Skills Workshop started on 11-5-2021, due to the suspension of the schools and due to the scope of the workshop which required the physical presence of the students to complete the workshop. Most of the students in the class were involved in robotics for the first time. However, they found the subject of the workshop very interesting, approached it with enthusiasm and great confidence and expressed their willingness to work together in their teams to achieve the best possible result. The students were very happy and responded very creatively, even writing short scripts for the "monsters", as they called them, that they made with the SIX BRICKS.

Teacher's evaluation diary

Overall observations and comments:

The final assessment is very positive. Although we faced too many difficulties, the students participated enthusiastically. Due to quarantine not all the planned activities were carried out. However, the students became familiar with the equipment and the programming environment and experimented a lot in improving the construction or code, using their knowledge from Physics, Mathematics and Programming.

Although we faced too many difficulties and time constraints due to quarantine, the students participated enthusiastically and became familiar with the equipment, programming environment and educational materials, and experimented a lot in improving the construction or code, using their knowledge from Physics, Mathematics and Programming. They participated in all team processes and activities harmoniously, accepted their roles as team members, and were characterized by active listening and inclusion. They also showed great ease in understanding all new concepts. All students were actively engaged in the activities, and on their own initiative they initiated or adopted activities to better understand the content of each workshop. Most of the objectives of the programme were largely met. I think what particularly helped the success of the workshop is that instead of being held once a week over a 6-week period, it was held within a week every day, a kind of robotics festival within our classroom. So the kids had the workshop on their minds all the time and that helped a lot in making it happen. Also the fact that the class is also on the ipad programme gave a great boost to the children's digital skills because we found a new profession that of a secretary, resulting in small mini presentations being created at the end of each workshop, which were presented in plenary at the end of each lesson.

The difficulties in implementing the project were mainly related to: (a) the lack of logistical support infrastructure (tablets, WiFi); (b) the unsuitability of the classroom for supporting the working groups, creating a robotic construction and storing it for additional experimentation, as well as the lack of storage space to keep all the material; (c) the large number of students (24) which resulted in difficulties in the smooth running of the workshops, d) the great difficulty in supporting all the students by one teacher, e) the time limitation of one teaching hour for organizing the room, sharing the material, creating/programming the robot construction, improvement/differentiation/extension actions, closing the lesson/closing the lesson/closing it.

In all the workshops the students worked in groups of four children. They worked together smoothly and with a fair distribution of activities between the members of each group. The majority of the students were working with robotics for the first time. They easily followed the instructions for building and programming the operation of the robots (WeDo 2.0). Each student was given the opportunity to program a robot individually, and their construction was a team effort. They responded to the Boomtown FLL challenge with great interest and each team managed to construct the buildings and their surroundings, making the most of the material in each package. Photographic and video footage of various stages of the buildings' construction is available. Each team also built their own crane, activating it first manually and then by programming, and it was also used as a lift by one team in their construction. In the end all the teams' constructions were brought together to create "our" city. After the first, second, fourth and sixth workshops the students were given self-assessment sheets that largely captured what was mentioned above. All the objectives set in this thematic cycle and in the workshops as a whole were achieved, since the time for the last workshops was reallocated by using all the teaching hours of two days.

The lesson took place in the classroom. The attempt to configure the classroom by combining desks created the conditions for the successful outcome of the project, but difficulties were encountered. The main one was the attempt not to lose the pieces by the students. Constant reminders and remarks about careful use of the material caused anxiety at some stages of the effort.

Conclusions - Grounds for further research

From the study of the data obtained from the interviews, the initial assessment and the final evaluation of the pilot action by the teachers who implemented it, we reach the following conclusions:

89% of the teachers confirm that "the children were fully familiar with the educational material", which highlights its suitability for the ages to which it is addressed and by which it was used (primary school, secondary school).

100% of the teachers replied that the children "participated in all group processes and activities harmoniously. They accepted their roles as members of the group. They were characterized by active listening and inclusion", although difficulties were created by the pandemic measures that did not allow children to work in groups to the planned and desired extent.

100% of teachers responded that "the progress they made each time was great. Most or all objectives were met / Met to a very large extent", which confirms that the teaching approaches and use of materials do not impede the achievement of objectives / learning outcomes, but rather facilitate it.

83% of teachers responded that children "seemed to understand all new concepts with great ease", which confirms that the teaching approaches and manipulative materials are effective and facilitate learning.

89% of teachers responded that "all students were actively engaged in the activities. Students on their own initiative initiated or adopted activities to better understand the content of each workshop", which confirms that motivating all children through the introduction of educational robotics in the classroom is one of the most important factors in transforming the teaching practice. At the same time, specific difficulties have emerged from the teachers' observations and suggestions, which we are called upon to overcome in the context of the universal implementation of the Skills Workshops programme. These difficulties have to do with the logistical infrastructure of schools and access to the necessary learning materials and equipment, the continuous training and support of teachers who will implement the new teaching approaches, the reform of curricula to ensure that the necessary teaching time is available for the implementation and successful completion of the programmes, ensuring the achievement of all the objectives.

EDUCATION POLICY AND PRACTICES

EFL TEACHERS' VIEWS TOWARDS THE PROMOTION OF 21ST CENTURY SKILLS

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ABSTRACT

The present dissertation aims to investigate the Greek in-service EFL state school teachers' views on the usefulness of the teaching materials and digital tools towards the promotion of 21st century skills. The objective is to explore whether the textbooks provided by the Ministry of Education for the subject of English in Greek state schools, and the digital teaching material selected by the EFL teachers are appropriate enough so as the 21st century skills to be developed and help learners be prepared for their thriving in the modern world. The primary and secondary educational sector EFL teachers' beliefs are compared and contrasted so as to be found out whether the one outperforms the other when it comes to the promotion of 21st century skills. Data collection was carried out via an electronic questionnaire which was distributed and completed by 172 participants, and focus group discussions, with one group consisting of primary and another one of secondary EFL teachers. Findings of the study suggest that although most EFL teachers recognize the importance of 21st century skills, the textbooks and digital tools used in the classroom are not that contributory to the enhancement of these skills. Finally, it is worth mentioning that the primary sector outperforms the secondary one in the promotion of most of the 21st century skills and thus in the more adequate equipment of young learners with these valuable assets. The dissertation concludes with the implications regarding the need for EFL teachers' further training on educational approaches that can promote 21st century skills and suggests some recommendations for future research upon the topic.

Key Words: 21st century skills, in-service teachers' beliefs, ELT, English language classroom, Greek educational context.

INTRODUCTION

In the digital era, the rapid growth of technology and erratic societal conditions due to the increasing rate of globalization have reshaped the standards of modern life while posing serious questions regarding the role of education in the multifaceted space of 21st century. Extensive researches in the domain of 21st century learning and English language learning in the Digital Age indicate that the media-governed, shifting landscape of the 21st century Knowledge Society has led to the emergence of new multilayer realities and societal etiquettes, which require a whole new set of skills to be dealt with (Gavin, Hockly, & Pegrum, 2013; Black, 2009). These indispensable skills for surviving and thriving in this globalized, media-dominated environment, though not yet officially standardized and strictly classified, are generally accepted and referred to with the term of 21st century skills (Black, 2009).

The broad and vague concept of the 21st century skills is being defined by various theoretical models, with the most prevalent, the one proposed by the Partnership for 21st century skills (Partnership for 21st Century Skills [P21], 2009). The Partnership21 suggests that 21st century skills are divided into three major interconnected categories of learning, literacy and life and career skills which can be developed through cross-disciplinary school subjects (P21, 2009). Learning skills refer to the abilities of critical thinking, creativity, collaboration and communication, which transform the modern agents into multitasking critical thinkers who deal with perplexed nuances, impose questions, negotiate with their colleagues and reach mutual agreements (P21, 2009). Literacy skills include information, media and technology literacy which empower individuals to process information descent from multiple sources and understand the functionalities and hidden threats of the advanced technological devices use (P21, 2009). Furthermore, life and career skills range from flexibility, leadership, productivity, initiative to

social skills which are necessary for the cultivation of well-rounded, vigorous and versatile personalities.

These skills are considered to be not only significant but a major prerequisite for modern learners' survival and success in working, public, academic and civic life as prospective citizens of 21st century Knowledge Society (Lemke, 2003; North Central Regional Education Laboratory [NCREL], 2003). However, recent researches reveal that the assumed modern educational institutes, school units and curriculums are not sufficient enough in developing the 21st century skills and thus failing to prepare the learners to thrive in Digital and Information Age (Lemke, 2003; NCREL, 2003). Despite the sheer significance of the 21st century skills' integration into the educational process, language experts, scholarly publications and scientific studies divulge that little has been done so as English language learning and teaching to be enriched with some of these principles, highlighting simultaneously that 21st century language learning does not differ much from that of the 20th century (NCREL, 2003).

THEORETICAL BACKGROUND

Multiliteracies have to do with the usage of language in today's society, of how to make sense in multiple sociocultural and space-specific contexts and at the same time to cope with multiple modes of a text in digital environments (Cloonan, 2010). The mastery of multiliteracies requires a new set of skills that covers a huge range from communication and connectivity to digital literacy and analytical thinking (Cloonan, 2010).

These skills become necessary for modern citizens in order to adapt to a constantly changing present and to find their place in the shifting "working lives", "public lives (citizenship)" and "personal lives (lifeworlds)" (Cope & Kalantzis, 2000, p.17). Today's working demands have ultimately changed with the modern workers to be expected to show flexibility, collaboration, creativity while dealing with situations, problem solving and actually to function more as knowledge multi-skilled agents who take initiatives rather than as mere hand-workers who execute commands (Cope & Kalantzis, 2000). Public lives have been enriched and diversified in a cultural and linguistic way, while altering the notion of citizenship and bringing to the surface new civic spaces that render "local diversity and global connectedness" as the new order of things (Cope & Kalantzis, 2000, p.15). Personal lives are also under a process of ongoing changes, since due to the intrusion of the mass media and social networking systems in the private sphere every aspect of one's personal life could become a contingent topic of discussion in social media (Cope & Kalantzis, 2000).

School and education system can function as catalyst in helping learners to be assimilated in this modern society (Cope & Kalantzis, 2000). The realization of this vision can happen through the redefinition of the role and the responsibilities of contemporary education (Cope & Kalantzis, 2000). School should offer courses that prepare learners to be collaborative, creative and actively engaged citizens in miscellaneous communities (Cope & Kalantzis, 2000). Besides, it is the 21st century learning that 21st century learners, the so called Millennials need in order to be adequately prepared in order to participate in today's society. The modern learner is characterized as "a complex, energetic and tech-savvy individual" who experiences a fast pace of life, participates in online communities and expects the technology that is an inseparable part of his/her everyday life to be used in the school lessons (Crockett, 2016).

It is generally accepted that modern citizens need a different set of skills and abilities from what people of the previous century needed, so as to be successful in the digitized era (P21, 2009). The term, 21st century skills covers a huge spectrum of skills, virtuositities, knowledge, personality characteristics and work attitudes that are considered to be the key to live effectively in the 21st century and especially to excel in working careers, academic environment and collegiate programs (Great Schools Partnership [GSP], 2020). 21st skills refer to competences that can be utilized in all settings of civic, working and academic life of modern learners such as collaboration, digital literacy, creativity, problem solving communication and critical thinking (Lewin & McNicol, 2015). These skills can assist individuals to respond to the increased demands of the contemporary market as they empower them to work cooperatively so as to bridge gaps and find solutions to perplexed issues, negotiate, disseminate and examine information from multiple perspectives and at the same time to transform into creators of knowledge through the aid of new technologies (Ledward & Hirata, 2011).

The polysemy nature of the 21st century skills concept has led various institutions and organizations to make an effort to chart and categorize its content. The most widespread and widely accepted theoretical models that shed light to the vague concept of 21st century skills and its implementation in the learning and teaching process are the ones proposed by the Partnership for 21st Century skills (2009), Wagner (2008) and Conley in association with Educational Policy Improvement Center (2010) (GSP, 2020).

The Partnership for 21st Century Skills is an American non-profit organization of alliances and collaborations among teachers, educators, educational institutions, school systems and communities who aim to “realize the power and promise of 21st century learning for every student” (P21, 2009). The Partnership’s educational vision relies upon the premise that all students deserve to be qualified with those competences which will enable them to navigate a borderless world and govern a polycentric universe (Mirra, 2017). The dissemination of information, the flow of knowledge, the social networking systems and the interconnectivity of the global market dictate the necessity for the existence of such a pioneering vision (Mirra, 2017).

science, geography, history and civics (P21, 2009). As for the interdisciplinary themes, they appear to be global awareness, economics, civic literacy, health and environmental literacy.

- Core subjects-3Rs and 21st century themes

The 21st century learning requires specific subjects accompanied by interdisciplinary themes which function as the fruitful environment for the students to conquer the needed skills (P21, 2009). The most important subjects that should be at the core of the school curriculum are English, languages, mathematics, fine arts,

PURPOSE

The current research seeks to investigate the views of Greek in-service EFL state school teachers regarding the contributory role of teaching materials and digital tools towards the promotion of the 21st century skills. The aim is to examine whether the teaching materials provided by the Ministry of Education for the English subject and the digital tools either offered by the MOE or independently selected by the EFL teachers can function as useful aids towards the establishment of 21st century learning, and which of the 21st century skills they actually enhance. The study focuses on the comparison and contrast between the prevalent beliefs of the primary and secondary EFL teachers in order to explore which of the two encourages more the development of 21st century skills.

The research questions that are sought to be answered through this study are the following:

1. Which is the stance of the practicing Greek EFL teachers towards the usefulness of 21st century skills?
2. To what extent do the teaching materials and digital tools used in the EFL classroom of Greek state schools promote 21st century skills?
3. Which of the 21st century skills are developed through the teaching materials and digital tools used by the practicing Greek EFL teachers?

Taking into consideration the new national policies and the imposition of teachers training programs on ICTs, a positive stance is estimated to be prevalent. Based on the teachers’ autonomy and lack of assessment policies, it is assumed that although the majority of the EFL teachers will embrace the significance of 21st century skills, only those who are willing to take initiatives and tangibly implement programs such as the e-twinning one in their classrooms, will achieve a more practical application of ICTs in the teaching process.

RESEARCH METHODS

For the purposes of the study, a questionnaire aimed at all practicing EFL teachers of Greek state schools of all educational sectors, observation of the official teaching materials and digital tools provided by the MOE and focus group discussion of in-service EFL teachers of Greek state primary, lower secondary, upper secondary and Vocational schools located in Giannitsa, Region of Pella were designed and conducted.

When it comes to the questionnaire, a final total of 172 certified in-service EFL who teach in Greek state schools of the primary, lower secondary and upper secondary sector all around Greece accepted the invitation to take part in the research completing the questionnaire. From these teachers 84,3% (N = 145) are female and only 15,7% (N = 27) are male, rate which does not cause any surprise since the academic field of English language and literature and the EFL teaching as a career path is mostly

selected by women. Thus, such a disproportion is sensible and rather expected. The average research population belongs to the age category of 41-50 years and their teaching experience mostly spans to about 20 years. The research sample is considered to be equally balanced since out of 172 participants, 87 are positioned in Greek state primary schools and 85 teach in the secondary educational sector.

As far as the two groups of focus group discussion is concerned, the first one consists of 3 practicing EFL teachers in Greek state primary schools of Giannitsa, Pella and the second one is comprised of 4 practicing EFL teachers, two of whom work in the upper secondary sector and more specifically at a Lyceum, and of the other two, the one is positioned in the upper secondary sector, at a Vocational School and the other in the lower secondary sector at a Gymnasium. All of these schools are positioned in Giannitsa, Pella or in villages of the rural area surrounding the city of Giannitsa. All of the participants in both groups are females, acquaintance to each other and have about seventeen years of teaching experience in Greek state schools. In the first group, all three participants are Bachelor degree graduates, with the two of them having successfully completed the training program "ICT in education B level" and the other one the training program "ICT in education A level". In the second group, three of the four participants possess a Bachelor degree and have already accomplished the "ICT in education B level" and the last one is a Master degree graduate who has not participated in any ICT training program.

The quantitative data of the survey were collected through a questionnaire on the use of teaching materials and digital tools towards the promotion of 21st century skills, which was especially and exclusively designed for the purposes of the present study (see Appendix A). The questionnaire was specially designed for the purposes of the study in google forms platform and its construction was based on the guidelines and theoretical models regarding the valid design and processing of questionnaires, suggested by Dörnyei (2003). When it comes to the face-to-face focus group discussion, it is one of the most popular qualitative research methods and it was selected because it is considered to offer an in depth understanding of the research results (Krueger, 1998). More specifically, the fact that it is not static, but it is characterized by dynamism since the moderator can modify the conversation so as to better facilitate it, provides better results and more profound information on the topic discussed (Krueger, 1998).

The questions addressed to the EFL teachers constitute an unstructured, open-ended questionnaire in which the items are arranged in topic related areas corresponding to the targeted research questions. More specifically, the questions aimed to elicit more targeted answers and thus gaining a better insight of the teachers' beliefs towards the 21st century skills, to what extent according to their opinion the teaching material and digital tools include tasks that enhance these skills, and which of these skills are actually enhanced as well. The questions were introduced by the researcher, who was the coordinator of the discussion and the participants provided their answers randomly either by taking initiatives or by commenting on their fellow participants' responses. The questions functioned as the inception of a group discussion and exchange of different viewpoints and not as personally directed inquiries.

The data collection research method which was employed for the gathering of the research sample is the convenience non probability sampling method (Dörnyei, 2007). According to this, the convenience sample consists of individuals who are easily accessible and eager to participate (Dörnyei, 2007). The quantitative data have been obtained through the questionnaire presented in sections 3.4 and 3.5 (see also appendix A). The SPSS statistical software has been employed in order for these data to be analyzed through statistical tests. A five percent significance level for all tests was considered ($p < .05$). A more comprehensible representation of the data is exemplified through statistical tables and a more illustrative one through figures and graphs which have been created with the capabilities of google forms software.

More specifically, absolute and relative (%) frequencies of the responses, mean value of the responses and standard deviation per item were used for the demonstration of data derived from variables measured by Likert scale. Additionally, number of responses or else absolute frequencies and the corresponding percentages are used for the presentation of results for variables of qualitative (categorical) type such as gender and multiple answer questions.

Independent samples t-tests has been employed to compare mean values per parameter for the two groups of the primary and the secondary educational sectors, while chi-square test of independence has been utilized to compare two nominal variables. The significance level for all statistical tests was set to a 5% level.

For the analysis of the qualitative data, collected through the focus group discussions the conceptual research method in combination with the transcribed-based analysis considered to be the most appropriate one (Dörnyei, 2007; Krueger, 1998). The valid and systematic analysis of the data is guaranteed through the use of transcripts constituting “a word-for-word written record of the focus group discussion, based on the audio recording” (Krueger, 1998, p. 150). The conceptual analysis of the transcripts in terms of utterances analysis, demarcation of concepts and terms’ definitions and the deeper understanding of their meaning gave valuable insights for the Greek state EFL teachers’ perceptions (Krueger, 1998).

RESULTS

The findings of the research showed that the EFL teachers have a positive stance towards the promotion of 21st century skills. They try to modernize their teaching practices and catch their learners’ interest by implementing ICTs in their lessons, either in terms of using computers and the Internet or employing the services of the “Digital School” provided by the MOE. As far as the appropriateness of the teaching materials and digital tools they use in the classroom on developing their learners’ 21st century skills, their beliefs vary from the primary to the secondary educational sector.

The most positive aspects come from the primary educational sector. Primary EFL teachers praise the PEAP programme aimed at young learners of English of the first and second grade of primary school. They firmly believe that the PEAP programme offers useful, student-friendly and versatile teaching material that, when meaningfully employed in the classroom can help learners develop most of the 21st century skills appropriate for their age. Additionally, the textbook used in the third grade of primary school along with its digital supplementary teaching material stored in the educational platform of Photodentro receive positive comments. The print and the online version of this textbook are considered to be comprehensible, compatible with technology and contributory to the promotion of experiential learning.

The study also revealed that the skills of communication, collaboration, creativity along with the life skills are developed in the EFL classroom of primary school. The teachers prioritize their learners’ cultivation of social skills for their successful function within social groups, while the aforementioned materials include tasks that engage learners in group work. Learners are also called to participate in activities which require the application of more creative approaches and imaginative techniques in order to be accomplished. Finally, the embellishment of the English language lesson with songs and videos and some inquiry projects aimed at the learners of the final grade of the primary school is considered to enhance learners’ digital literacy according to the primary EFL teachers.

However, this is not the case with the textbooks used in the other grades of primary school. The rest of the textbooks and especially those used in Grades 5 and 6 are really negatively criticized as outdated, inadequate to teach the new skills and bombarded with too much information that make them confusing (Sifakis & Tsagaris, 2014). Additionally, the ICTs in the classroom are mostly used as an educational trend that can excite young learners’ enthusiasm. Although, according to the Guide for Foreign Language Teachers (2013) EFL teachers have the autonomy to enrich their teaching with any teaching aid they considered as useful, most of the times the use of the computer is perceived as an element of entertainment since its main function is limited to the presentation of videos and songs.

In the secondary educational sector, the school EFL context seems to be even more perplexed. The textbooks used in the lower secondary sector are quite old and written based on more traditional educational approaches (Kesisoglou & Mitsikopoulou, 2015). The topics are analyzed in a simplistic way that does not encourage learners’ problem solving abilities (Kesisoglou & Mitsikopoulou, 2015). Their positive element though, is the existence of group work activities that enhance collaboration and learners’ critical thinking. Yet, the enclosure of these tasks into the lesson depends on the teacher’s view on their usefulness (teachers).

In the upper secondary, vocational education in Greece (Vocational Schools EPAL), not only the textbooks are obsolete but also there is almost any digital teaching material that can supplement them. EFL learning in this kind of schools seems to be lying under a continuous process of depreciation. Even the lesson of English for specific purposes does not empower the learners with valuable skills necessary in their future career path.

As far as the upper secondary sector of Lyceum is concerned, there has been an effort for the subject of English to be modernized. For the first time, officially state textbooks published and introduced in the lesson. Due to their recent introduction to schools, EFL teachers have not crystallized their beliefs upon their use, but the first indications show positive reactions. The teachers estimate that the new textbook covers a broad spectrum of social topics emphasizing communication, oral production and learners' critical thinking. Learners are even encouraged to engage in inquiry-based projects finding and combining information retrieved from recommended websites, a task which also enhance their logical reasoning.

Despite these modifications, EFL teachers advocate their confusion regarding the state EFL teaching objectives (MOE, 2003b). Although the lesson tends to be modernized, the initial objectives and assessment in the subject of English has not changed, leading thus to a mismatch between the knowledge taught in classroom and the evaluation based on exam-oriented style that learners undergo. Furthermore, EFL teachers feel inadequate to deal with this new kind of books containing no Grammar since the required approach for this textbook to be taught is far more different from the traditional way of teaching they have been applying for all these years. Hence, EFL teachers highlight their need to be further trained on new educational methods and be equipped with complete digital teaching material immediately applicable into the lesson.

In addition to this, according to the participants of both educational sectors digital literacy is perceived as the ultimate skill of the 21st century learning. Learners are encouraged not only to be familiarized with the use of technological gadgets that already dominate all aspects of modern life but also to acquire a deeper understanding of the strengths and weaknesses of these tools. However, the implementation of technology in schools does not substantially differentiate in most cases the traditional learning process (Mirra, 2017). Educational technology is practically used more as an eye-catching element that triggers only young learners' enthusiasm since the older ones does not perceive it as a novelty (Lewin & Mcnicol, 2015).

Results for Question: “Which is the role of the headmaster at school and to what extent does he/she encourage the implementation of digital tools in the classroom?”

Based on the interviewees' comments, it becomes evident that the role that the headmaster plays in the primary and lower and upper secondary school units is mostly supporting. The headmaster is a supporter of the EFL teachers, encouraging them to employ the Digital School and to incorporate in the lesson every tool they consider as useful (PP1). Additionally, the mutual support between the EFL teachers and the schools' headmaster can benefit the learners and the school units. To quote one of the interviewees “together we achieved to have all our classrooms equipped with laptops, whiteboards and projectors” (SP3).

Table 4.5.1.2 presents the prevalent belief of each educational sector regarding the headmaster's role.

Table 4.5.1.2
Headmaster's Role

Beliefs and Practices	Primary Sector	Secondary Sector
Headmaster's Role	<ul style="list-style-type: none"> • A real supporter 	<ul style="list-style-type: none"> • Mostly encouraging

Results for Question: “What kind of changes would you introduce to the teaching of English so as to prepare the learners to function in the modern world?”

From a synopsis of all the interview responses, it can be deduced that the most urgent change that EFL teachers of both primary and secondary educational level desire is the introduction of more teaching hours for the subject of English in Greek state schools' curriculum. Other recommended changes refer to the amelioration of the textbooks provided by the MOE. As PP1 states, “the teaching material for the first three grades is fine, the ones of the other grades should be improved”. Other than this, EFL teachers of the secondary educational sector underline the need for a separate and especially equipped EFL classroom. Furthermore, it is highlighted the need for elevation of the prestige of the subject of English or as the PS4 advocates “to stop the English subject in the Greek state schools being perceived as inferior”. Another change that the EFL teachers consider as useful is the connection of the subject of English with the acquisition of English language competence certification. To quote one of the interviewees “Graduating from the upper secondary school or even the lower secondary state school students should be qualified with an official state certification of language acquisition.” (PS3).

Table 4.5.1.6 summarizes the Greek EFL teachers recommended changes for the subject of English in the primary and secondary educational level.

Table 4.5.1.6
Proposed Changes

Beliefs and Practices	Primary Sector	Secondary Sector
Proposed Changes	<ul style="list-style-type: none"> • More teaching hours • Teaching material of the last three grades to be ameliorated 	<ul style="list-style-type: none"> • More teaching hours • Specially designed classroom for the subject of English • English language acquisition certification to be introduced

Identifying the problematic areas in the teaching of English is the stepping stone for the modernization of the Greek state school and the promotion of 21st century skills. The teachers of both sectors demand more teaching hours so as the proposed syllabus to be covered and 21st century skills to be developed through group projects and innovative tasks. When it comes to the primary sector, the teaching materials for the Grades of class 4, 5 and 6 are required to be changed altogether or to be ameliorated so as to be more user-friendly. In the secondary sector, it is required the subject of English to be offered in a specially designed classroom equipped with valuable tools. Additionally, the EFL teachers highlight a perpetuated belittling attitude towards the subject of English, mostly due to the mismatch of the acquired knowledge in the state EFL classroom with the absence of a certified documentation in English language competence.

Table 4.5.2.4 summarizes which of the 21st century skills are promoted through the textbooks provided by the Ministry of Education.

Table 4.5.2.4
Promoted Skills through Textbooks

Promoted Skills through Textbooks	Primary Group	Secondary Group
Critical thinking	<ul style="list-style-type: none"> • Not promoted in the first grades of primary school • Though in the last two grades, it could be developed, the textbooks are completely inadequate 	<ul style="list-style-type: none"> • Mostly promoted by the new books • A recent change
Creativity	<ul style="list-style-type: none"> • Promoted mostly through short stories • The existence of handcrafts at the end of the book enhances creative engagement 	<ul style="list-style-type: none"> • Only the textbooks used in lower secondary sector include creative projects • Completely excluded from the textbooks used in the upper secondary sector
Problem solving	<ul style="list-style-type: none"> • Not so much promoted • Only through a limited number of riddles 	<ul style="list-style-type: none"> • Mainly enhanced through classroom constructive discussions • Topic-related homework assignments promote problem solving
Digital literacy	<ul style="list-style-type: none"> • Promoted through online activities but only for the last grade of primary school 	<ul style="list-style-type: none"> • Developed in terms of online searching and processing of information

As far as the secondary educational sector is concerned, the above mentioned findings indicate a rather multifaceted reality. When it comes to the upper secondary sector and especially the Lyceum, the

Ministry of Education published for the first time textbooks for the three grades. Up until very recently, EFL teachers were called to select a course book among the ELT publishers' textbooks of a proposed list. The EFL teachers seem to be concerned about the newly introduced textbooks. Overall, the new textbooks receive positive comments. The participants have highlighted that the new textbooks promote communication, critical thinking and simultaneously combine problem solving with digital literacy. Though there is no mentioning about tasks that develop creativity.

Despite the introduction of modern elements to the books, the EFL teachers feel puzzled as the previously mentioned textbooks require new educational approaches with which most of the EFL teachers are not familiar with. Another problem that questions the appropriateness of these books is their mismatch between the new rationale of the proposed activities and the traditional exam oriented objectives of the subject of English. Although the textbooks offer the opportunity for constructive discussion and connection with the digital tools, in the end learners will be called to take part in written exams with their knowledge of language skills being checked.

Thus, EFL teachers get bewildered regarding what to teach and what not to. Furthermore, EFL teachers highlight that it is up to the teachers' willingness and personal effort to enrich the lesson with the implementation of ICTs, since the MOE does offer them digital teaching material that accompany the textbook. Even Photodentro that yields positive outcomes does not offer so many options of digital activities aimed at adolescents as it does for younger learners. There are neither e-books with online supplementary activities nor a special programme such as the PEAP in primary school that could equip them with readymade digital material. It is up to the EFL teacher and the initiatives he/she is willing to undertake.

The present study has brought to light that the Greek primary educational sector outperforms the secondary one when it comes to the development of 21st century skills. It was found out that both the teaching materials and the digital tools used for EFL teaching in young learners enhance their creativity. Multiple handcraft activities, stories derived from the Greek mythology and fun game-like activities stored in the Digital School encourage learners to get involved in innovative tasks, using their inventiveness. Additionally, the teaching materials and digital platforms used in primary school proved to be contributory factors to the development of life skills in young learners. The term life skills encompasses principles and virtuosities directly connected to social behavior such as socializing, showing respect, taking initiatives, being flexible and productive (P21, 2009). Through language learning young learners are exposed to the foreign culture, the different world perception and ethical code learning to be more tolerated and respectful (Sifakis & Sougari, 2003).

Contrary to this, the 21st century skill that is mostly developed in the secondary education is critical thinking. The textbooks and the limited number of the digital teaching material, which aim at the more advanced learners of English, include tasks that prompt the learners to function more as critical thinkers rather than as passive receivers of knowledge. These learners are called to deal with realistic problems synthesizing multiple perspectives and activating their logical reasoning in order to draw conclusions.

IMPLICATIONS

To conclude, although in both sectors the use of computer is pursued, most of the times technology ends up being an empty signifier for the mere representation of the text in a different mode with no additional pedagogical value. Although, the EFL teachers have realized the necessity of 21st century skills and newly posed policies manage to modernize the educational system, the EFL teaching context in Greek state schools does not function as a fruitful environment for the development of these skills. Thus, through this research is suggested that education and further teachers' training on innovative educational approaches and ICTs implementation in EFL are considered to be imperative.

Given the importance of 21st century skills for the preparation of learners as modern citizens of the multifaceted knowledge society of 21st century, and the lapses of today's education towards this objective, further research and exploration upon this field is recommended. It would be valuable teaching practices to be observed and the newly introduced textbooks and digital educational materials to be evaluated further through future surveys upon the topic.

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TEACHERS EDUCATION PRACTICES

DIMENSIONS OF SCHOOL EFFECTIVENESS IN THE PRIMARY SCHOOL OF THESSALONIKI

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ABSTRACT

The purpose of this study is to investigate teachers' perspectives of the elements that influence the efficacy of state schools in Thessaloniki, Greece. A survey approach was employed with a sample of 150 persons, both teachers and school leaders, to achieve the study's goals, utilizing a questionnaire created in Google forms. The study's findings revealed that elements connected to the pedagogical and learning functions, to the administrative function of education, as well as the Professional development of teachers, all contribute to the improvement of school unit efficiency.

Key Words: effectiveness, efficiency, teachers' perceptions, primary education.

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INTRODUCTION

The conceptual clarification of the phrase "school effectiveness" is a difficult task, as any attempt to provide a definition is contingent on the research point of view being evaluated at the time. Furthermore, each researcher's purpose leads to different outcomes. In this context, in the early stages of school effectiveness research, the emphasis is on students' school performance as well as the variables that may affect them. More specifically, school effectiveness refers to an educational organization's performance, whereas performance refers to learning outcomes, and more specifically, the average of students' achievements at the end of their school life. The hunt for characteristics that affect learning outcomes and cause school units to differ is exciting for researchers. Researchers such as Scheerens and Borker, as well as Reynolds and his colleagues, have concentrated their efforts on identifying the factors that contribute to disparities in educational results in schools. The research on school effectiveness expanded in the 1990s as a result of a shift in interest in increasing the quality of educational work offered and how it affects effectiveness (Scheerens, 2000). According to recent research, school efficiency is a dynamic model of interactions that is shaped by how different levels of the education system interact (Creemers and Kyriakides, 2006). Nowadays, the need for schools to fulfill the ever-changing demands of modern society has prompted researchers to seek for variables that will help to the improvement of educational units (Tsekouropoulos et al., 2022) and, as a result, the design of a new educational policy. At the same time, researchers are primarily concerned with identifying those tactics that will lead to the attainment of the school unit's objectives in order to improve school efficiency (Pamouktsoglou, 2001).

LITERATURE REVIEW

Factors of efficiency

Researchers examining educational difficulties are frequently unable to use experimental procedures within school units, thus the findings they reach are usually the product of basic observation within the school and classroom. This characteristic helps kids to construct a realistic picture of what is going on in the educational environment; nevertheless, identifying causal linkages between different components is not always easy (Mortimore, 1993). The current study will focus on the role of the pedagogical and learning function, leadership, and professional development of teachers in raising the quality of teaching delivered and, as a result, the efficiency of the school unit.

Effective leadership

The necessity for stable leadership is seen vital because, in order for society and, by extension, the school to continue to flourish, there must be a leader who will coordinate all efforts in the school context (Reynolds et al., 2015). A strong leadership organization encourages teaching staff dedication, successfully executes educational policies, and disseminates educational outcomes across society (Reynolds et al., 2015). Leaders of a school unit must monitor and control the performance of their teaching staff to ensure the attainment of the desired objectives, the implementation of new educational policies, and the training of the teaching staff to improve it (Reynolds et al., 2015). After all, the principal of a school is fully aware that the higher the levels of channel integration quality, the stronger the clients' internal commitment, where the client in this situation is the teaching staff of the school structure (Theocharis & Tsekouropoulos, 2022). A school leader's impact affects not just the individual level, but also the organizational system, in which all stakeholders interact (Hallinger and Heck, 1998). According to Brewer (1993), the director of an educational unit can positively affect instructors by inspiring them to create distinct goals for the planning of their instruction. In addition, the principal's role in developing educational goals, defining a clear mission, and selecting the proper teaching staff is one of the most significant components in obtaining optimal educational results (Hallinger and Heck, 1998). Furthermore, developing a vision for a school's aims might assist its leader in being more effective (Hallinger, Bickman & Davis, 1996). As a result, the principal's position is regarded as especially crucial, as he is the one who will establish and convey to the rest of the teaching staff his vision for the school, inspiring them to help him in its implementation (Vlachoudi, 2021).

Concentrate on the learning process.

According to this aspect, the primary goal of a school organization is to maximize learning results. To accomplish this, the following conditions must be met: a) increasing available learning time by increasing school hours, b) adding supportive activities and lessons after the end of traditional teaching hours, and c) ensuring that teaching and learning time is used to the greatest extent possible, without interruption, regardless of course alternation (Reynolds et al., 2015). According to Sheerens (2004), extra focus should be placed on the effective use of teaching time. More specifically, the teachers of a school unit must plan their teaching activities in order to properly manage both their teaching time and the time they have for their students to complete their activities, to monitor its children's absences, and to ensure that students' work is completed within a reasonable time (Vlachoudi, 2021). It should also be mentioned that teachers should concentrate on teaching youngsters the necessary knowledge and promoting work either individually or in groups. This approach will be beneficial as there will be important cultural and environmental influences on the quality of life of the city's population (Tsekouropoulos et al., 2022A). Finally, focus should be placed on engaging pupils in high-quality educational activities so that increased learning time is fruitful (Offsted, 2009).

Teachers' professional development

The teacher is the primary executor of activities and actions of a school unit (Athanasoula-Reppa, 2008), who not only implements but also participates in educational planning through the selection of appropriate means, methods, and activities with the primary goal of achieving pursued teaching objectives (Katsarou and Dedouli, 2008). In a continually changing and evolving society, the teacher, who influences the school's produced educational results (Xochellis, 2003), must cope with his multidimensional responsibility through personal development (Sofou & Dieronitou, 2015). As a result, it is deemed vital for instructors to participate in training programs that will contribute to both their professional growth and the improvement of an educational unit's quality and efficiency (Douka et al., 2007).

Purpose and aims of the research

Although a lot of studies have been undertaken on the effectiveness of schools in other countries, this is not the case in Greece. More specifically, the majority of research undertaken studies the effect of an individual aspect on enhancing the effectiveness of a school. Considering the above, it is prudent to conduct research into the aspects that influence the overall performance of a school, as well as the relationship that exists between them. The purpose of this study is to investigate the perceptions and attitudes of teachers in public primary schools in Thessaloniki regarding the factors that can contribute to increasing a school's efficiency and to identify the existence of a correlation, according to the above, between these factors.

RESEARCH METHODS

The interpretive technique was used in the current study based on its goal, which facilitates the establishment of causal links between the components evaluated. Regarding the type of empirical data under consideration, it should be emphasized that it was collected quantitatively using an internet questionnaire.

Population and samples

The current population consisted of primary school teachers employed in Thessaloniki Prefecture schools. The study included 70 teachers from educational units in Eastern Thessaloniki and 80 from schools in Western Thessaloniki. The researcher picked the Probability Sampling approach, so that all units of the population have the same probability of being selected and the final sample is representative of the population. In terms of methodological and statistical analysis, the representativeness of the sample under research is critical (Paraskevopoulos, 1993). It should also be emphasized that the sample was constructed in layers, with the first layer based on the respondents' profession and the second layer based on their permanent residence. The application of this strategy aided in the acquisition of a representative sample of the population.

Instruments

The electronic questionnaire was utilized to conduct the survey. The usage of this tool adds to the analysis of quantitative data and ensures that all participants are treated equally (Paraskevopoulos, 1993). Furthermore, because the study was undertaken in the midst of the coronavirus epidemic, it was the most acceptable manner of gathering data due to the government's stringent actions in the context of its containment. Participants are requested to provide demographic information at the start of the questionnaire. Gender, age, specialization, years of employment, degree of study, permanent residence location, and position of responsibility are all gathered in greater detail. The following is an introductory question about the questionnaire's three main axes and how much they believe each of them contributes to the efficacy of the instructional unit. It should also be mentioned that the questionnaire is divided into three major axes with closed-ended questions graded on a five-point Likert scale (1 Very low, 2 Low, 3 Normal, 4 High, 5 Very High). Furthermore, the first axis consists of questions addressing the Pedagogical and Learning function, the second involving the Administrative function, and the third concerning the Professional Development of Teachers.

Data analysis

Following the compilation of the questionnaires, the findings were exported in Excel format, and the SPSS statistical analysis tool was utilized for analysis and data processing. Descriptive statistics were used to arrange and present the research data, whereas inductive statistics were used to derive more specific findings. The axes under examination were shown to have a normal distribution at the individual levels of the categorical variables using Kolmogorov-Smirnov control, which led to the use of parametric analyses, specifically the t-test, ANOVA, and Pearson correlation coefficient. Furthermore, the use of inductive statistics allowed the opportunity to perform static estimation in the particular population based on the survey results. The variables tested were the individuals' positions of responsibility, years of service, and educational level.

Reliability & Validity

Concerning the questionnaire's validity, it should be mentioned that, prior to performing the survey, a pilot application was conducted on a limited number of persons from the selected sample in order to remedy any shortcomings in the questionnaire. More specifically, 10 persons from the target audience completed the questionnaire, and based on their observations, some adjustments were made to the content of the questions to make them clearer. The research's reliability was then assessed by

determining the Cronbach alpha coefficient. Based on the findings of the study, it appears that there is a high level of internal consistency between the questions that comprised the three axes, as the coefficient values were 0.945, 0.963, and 0.909, respectively. Cronbach alpha was 0.971 at the end, indicating that the questionnaire was extremely reliable.

RESULTS

Participants were initially asked how significant they thought several criteria were in improving the efficiency of a school unit. According to the findings in Table 1, the administrative function appears to be "extremely" significant (Medium value = 5), while the educational and learning functions, as well as teacher professional development, were rated as "very" vital (Intermediate price = 4). As a result, according to the sample's responses, all of the analysed components play a critical role in improving the efficiency of a school instructional unit, with the administrative function playing a particularly important role.

Table 1
Distribution of sample answers to the question "How important do you consider the following factors to improve the effectiveness of a school unit" and appropriate descriptive measures

Factors to improve the efficiency of a school unit:	Frequency, Percentage%						A.P* (I.U)
	Very low (1)	Low (2)	Normal (3)	High (4)	Very high (5)		
Pedagogical and learning function	-	-	13 8,7%	67 44,7%	70 46,7%	4 (1)	
Administrative function	-	-	14 9,3%	48 32%	88 58,7%	5 (1)	
Professional development of teachers	-	-	22 14,7%	61 40,7%	67 44,7%	4 (1)	

* AP: Average price, IR: Intra-quadratic range

Pedagogical and educational function

According to the results shown in Table 2, it is observed that the participants stated that teachers, to a large extent ("High"), "use a variety or combination of assessment methods depending on the objectives and the content of the course", "prepare the entire teaching assignment", "make effective use of the teaching time for the implementation of the objectives and the content of the Curriculum", "use the evaluations for the feedback of the teaching and the improvement of the students", "encourage the development of students' critical thinking in the learning process" and "encourage the development of students' soft and digital skills in the learning process" (Mean value = 4). Furthermore, according to the participants' perspectives, the teaching responds ("High") to the needs and expectations of students (Average value = 4). Also, teachers appear to use a variety of innovative / alternative teaching methods" and "alternative forms of assessment, depending on the objectives and content of the course" (Medium value = 3).

Table 2
Distribution of sample answers to questions related to teaching, learning and assessment and appropriate descriptive measures

Teaching, learning, and assessment	Absolute and relative frequency						A.P* (I.U)
	Very low (1)	Low (2)	Normal (3)	High (4)	Very high (5)		

Educators:

<i>use a variety or combination of assessment methods depending on the objectives and content of the course</i>	10 6,7%	62 41,3%	63 42,0%	15 10,0%	4 (1)
<i>prepare the entire teaching assignment</i>	5 3,3%	53 35,3%	63 42,0%	29 19,3%	4 (1)

<i>make the best use of teaching time to execute the Curriculum's-objectives and content</i>	5 3,3%	42 28,0%	69 46,0%	34 22,7%	4 (1)
<i>use a variety of innovative / alternative teaching methods</i>	14 9,3%	66 44,0%	53 35,3%	17 11,3%	3 (1)
<i>use alternative forms of assessment depending on the objectives and content of the course</i>	22 14,7%	67 44,7%	46 30,7%	14 9,3%	3 (1)
<i>use evaluations to provide feedback on instruction and help students develop.</i>	12 8,0%	47 31,3%	64 42,7%	26 17,3%	4 (1)
<i>encourage the development of students' critical thinking in the-learning process</i>	6 4,0%	52 34,7%	61 40,7%	31 20,7%	4 (1)
<i>encourage the development of students' soft and digital skills in the learning process</i>	17 11,3%	56 37,3%	56 37,3%	20 13,3%	4 (1)
<i>The teaching satisfies the students' needs and expectations</i>	3 0,7%	35 2,0%	93 23,3%	18 62,0%	4 12,0% (1)

* AP: Average price, IR: Intra-quadratic range

Administrative function

Regarding the questions related to the leadership - organization and administration of the school unit, taking into account the results presented in Table 3, it is concluded that the participants answered mainly "High" to all the suggestions. More specifically, it seems that the principal "communicates to the other teachers the goals, vision and values of the school", " develops the organizational structure in accordance with the school's policy and strategy", "supports a collaborative, participatory, collective framework", "ensures that staff, students, and parents are given accurate and up-to-date information", "facilitates the participation in seminars" and "motivates participation in educational programs" to a large extent ("High") (Medium price = 4).

Table 3
Distribution of sample answers to questions related to the leadership - organization and administration of the school unit and appropriate descriptive measures

Leadership - Organization and administration of the school unit	Absolute and relative frequency					A.P* (I.U)
	Very low (1)	Low (2)	Normal (3)	High (4)	Very high (5)	

The headmaster:

<i>communicates to the other teachers the goals, vision and values of the school.</i>	4 2,7%	6 4%	40 26,7%	56 37,3%	44 29,3%	4 (2)
<i>develops the organizational structure in accordance with the school's policy and strategy</i>	3 2%	11 7,3%	45 30%	49 32,7%	42 28%	4 (2)
<i>supports a collaborative, participatory, collective framework.</i>	3 2%	7 4,7%	44 29,3%	46 30,7%	50 33,3%	4 (2)
<i>ensures that staff, students, and parents are given accurate and up-to-date information</i>	1 0,7%	8 5,3%	28 18,7%	60 40%	53 35,3%	4 (1)
<i>facilitates participation in seminars.</i>	2 1,3%	10 6,7%	29 19,3%	63 42%	46 30,7%	4 (2)
<i>motivates participation in educational programs.</i>	4 2,7%	10 6,7%	33 22%	55 36,7%	48 32%	4 (2)

* AP: Average price, IR: Intra-quadratic range

Professional development of teachers

Next, regarding the school's training initiatives to improve teaching, learning and assessment, it appears that school units to a moderate degree ("Normal"), "invites specialists for the implementation of teacher training", "organizes in-school trainings for specific groups of specialties" and "offers opportunities for education and professional development for teachers"(Medium price = 3), while to a small extent ("Low"), "offers seminars in collaboration with other schools in the nation "(Medium price = 2) (Table 4).

Table 4
Distribution of sample answers to questions related to the school's training initiatives to improve teaching, learning and assessment and appropriate descriptive measures

Implementing school-based training efforts to improve teaching, learning, and assessment	Absolute and relative frequency					A.P* (I.U)
	Very low (1)	Low (2)	Normal (3)	High (4)	Very high (5)	
My school:						
<i>invites specialists for the implementation of teacher training</i>	10 6,7%	41 27,3%	50 33,3%	38 25,3%	11 7,3%	3 (2)
<i>organizes in-school trainings for specific groups of specialties</i>	22 14,7%	41 27,3%	56 37,3%	24 16%	7 4,7%	3 (1)
<i>offers opportunities for education and professional development for teachers</i>	9 6%	26 17,3%	62 41,3%	36 24%	17 11,3%	3 (1)
<i>offers seminars in collaboration with other schools in the nation</i>	45 30%	49 32,7%	43 28,7%	9 6%	4 2,7%	2 (2)

* AP: Average price, IR: Intra-quadratic range

DISCUSSION

According to the responses of the respondents, the teaching staff uses a variety of assessment methods as well as alternative forms depending on the teaching objectives and course content, confirming the findings of the OECD research (2020), which states that individual assessments (student assessment) contribute to the improvement of the teaching process. Furthermore, the planning of the teaching project as well as the effective use of the teaching time in order to achieve the teaching objectives appears to be a priority for the teachers, which is consistent with the findings of the research of Reynolds et al. (2015), who argue that it is necessary to make the most of both teaching time and learning time, as well as Sheerens (2004), who emphasizes that it is the responsibility of teachers to proceed with the planning of the teaching project.

The use of innovative / alternative teaching methods is a practice adopted by many educators, confirming the views of Reynolds et al. (2015), who consider that the choice of the appropriate teaching method depending on the course taught, age and abilities of students is a prerequisite for achieving maximum learning outcomes. Regarding the use of assessment by teachers, it should be noted that it is used by most for both the feedback of teaching and for the improvement of students, as suggested by Scheerens (1990), Reynolds et al. (2015) and the OECD (2020) in their respective surveys.

The perspective of educators who refer to their involvement in the development of both critical thinking and students' mild and digital abilities is consistent with the findings of Offsted (2009), which state that teaching staff should focus on gaining the essential knowledge for children, and Scheerens (2013), who emphasizes cognitive activation in children to attain optimum learning outcomes regardless of existing conditions. Furthermore, the vast majority of respondents stated that their teaching meets the needs and expectations of children, which is supported by the research of Reynolds and colleagues (2015), who report that the use of educational strategies and the integration of a variety of learning models into teaching helps to increase the commitment of the school class's student body. According to the teachers' responses, the function of a school unit leader is very significant for the following reasons:

- Facilitates the training of teaching staff (Reynolds et al., 2015)
- Affects the educational unit's organizational structure and improves organizational commitment (Hallinger and Heck, 1998). (Leithwood, et & al., 1993)

- Provides motivation to teachers (Brewer, 1993) (Leithwood, 1994)
- Establishes educational goals and properly administers the school unit's personnel resources (Hallinger and Heck, 1998). (Leithwood, 1994)
- Develops a vision, discusses it with the teaching team, and oversees its implementation (Hallinger, Bickman & Davis, 1996)
- Ensures that the teaching staff receives ongoing training and professional development (Pasiardis, 1994)

Regarding the organization of training activities at school, with the participation of specialists, and the provision of opportunities for professional development for teachers, the responses ranged to "Normal," while most respondents answered "Low" when it came to the organization of seminars in collaboration with domestic schools. These data contradict the research findings, which state that in order for teacher professional development to be effective, it must be supported by the school unit and linked to educational activities (Dudzinski et al., 2000, Ganser, 2000). However, principals play a significant role as well, as they should promote the adoption of in-school training in order to empower teachers, according to Reynolds and Teddlie (2000).

CONCLUSION AND RECOMMENDATIONS

The aim of the present study was to highlight the attitudes and opinions of teachers working in Primary Education in the Prefecture of Thessaloniki about the elements that contribute to an educational unit's efficiency.

According to the research participants, the administrative function is regarded as the most significant of the three, while the other two functions of education, pedagogical and learning functions, and teacher training, are regarded as equally important. Furthermore, the majority of respondents use a variety of assessment methods and their alternative forms in relation to the teaching objectives to be met, plan their teaching work, make effective use of their teaching time, employ innovative teaching methods, and use evaluation to receive feedback on both teaching and student improvement. Furthermore, teachers appear to be concerned in the development of children's mild and digital critical thinking skills, and their education, in their opinion, satisfies the requirements.

Concerning the role of the leader, educators believe that it is multidimensional and demanding since he must ensure that there is smoothness at all levels of a school unit's organizational structure. In general, the principal of a school establishes educational goals, supports the teaching staff, oversees the proper management of resources and materials, fosters a positive school culture, motivates the teaching staff and students, and ensures the participation of all stakeholders in the educational process.

In terms of teacher professional development, participants believe that involvement in training programs is vital for their own development, but they do not appear to pursue participation in national and European programs.

The current study could be the catalyst for the implementation of a larger scale research project, in which it would be appropriate to ensure the participation of a larger sample, initially of teachers from all over the country, in order to compare the results and draw generalized conclusions. Furthermore, involving teachers from both primary and secondary schools in the research would allow researchers to compare the results and determine whether teachers' perspectives on the factors that affect a school's effectiveness and the interaction between them differ depending on the educational level they serve. Finally, the participation of teaching staff from private schools in the research would aid in the conduct of a comparative study between public and private schools, allowing for a comparison of the results of different educational units.

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4th INDUSTRIAL REVOLUTION: EXPLORING THE KNOWLEDGE AND READINESS OF SECONDARY SCHOOL TEACHERS

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ABSTRACT

The purpose of this research is to investigate secondary school teachers' perceptions regarding the 4th Industrial Revolution (4IR) and the knowledge they have in order to handle it. 422 teachers responded and the reliability check of the questionnaire ranged from 0.777 to 0.951 for the five dimensions. The findings of the present study show that the participating teachers are moderately (sufficiently) aware of the 4IR and the new roles emerging in the workplace, the new skills (social, cognitive) required to adapt and manage upcoming changes. They use moderately devices in their personal life and workplace.

Key Words: 4th Industrial Revolution, secondary education teachers, readiness, knowledge.

TEACHER 4.0 - EDUCATION 4.0

With the advent of the 4th Industrial Revolution, the role of education is changing rapidly in order to meet the emerging educational needs. According to the OECD (2018: 3-4), "education can make the difference whether people embrace the challenges they are confronted with or whether they are defeated by them." What is more, "education needs to aim to do more than prepare young people for the world of work; it needs to equip students with the skills they need to become active, responsible and engaged citizens".

This brings us to the development of Education 4.0, a term used by theorists to describe the various ways in which technology could be integrated into the educational space. According to Fisk (2017) and Asiz (2018), Education 4.0. can take place at any time and place. It respects individual learning needs and time availability, thus each student can choose for themselves the way in which they wish to learn. It is also worth mentioning that students are getting more involved in the learning and teaching process, and experiencing situations of practical and experiential learning, guidance and collaboration. In such a context, "theory becomes practice, students become independent, think logically and lead to conclusions" (Panagiotopoulos & Karanikola, 2020:108). Finally, the communication is faster, the

administrative burden through automation of many processes is reduced, and the learning outcomes are modernized and improved (Lase, 2019).

As a following consequence, the term "Teacher 4.0" emerges and comes to meet the current requirements. However, are teachers prepared and ready to handle the 4th Industrial Revolution? Many theorists argue that most schools still operate on the basis of the Education 1.0 model, which is similar to Web 1.0, the first generation of the Internet, with the one-way teaching process predominating. The teacher is still at the heart of the teaching process, whereas the student's role is limited to that of the passive recipient of the knowledge deposited by the teacher. In addition, curriculums are dominated by traditional subjects such as mathematics, physics, literature, history and foreign languages, while technology is not used pedagogically (Keats & Schmidt, 2007).

Important indicators and basic prerequisites for teachers' readiness are acquiring the right mind-set and skill-set, and also exploring their perceptions, dispositions and beliefs (Terrell & Lindsey, 2009). Teachers should feel comfortable to work in digital environments, teach students life skills, use emerging learning technologies in education, be digitally literate and integrate technology into curriculums, communicate effectively with their students, personalize learning and encourage students' creativity, innovation and social interaction (Aly, 2019; Aoun, 2018; Panagiotopoulos & Karanikola, 2020; Sudlow, 2018).

In addition, they should also demonstrate traits such as openness, empathy, flexibility and perseverance (Fowers & Davidov, 2006).

RESEARCH METHODS

The purpose of this research is to investigate the perceptions of secondary school teachers of the Region of Western Greece regarding the 4th Industrial Revolution (4IR) and the knowledge they have in order to handle it. The research questions deriving from the aforementioned research aim are:

- What are the teachers' perceptions about their knowledge of the 4th Industrial Revolution?
- Is there a correlation between the individual dimensions of knowledge?

The research was conducted by following the quantitative methodology and by using a questionnaire as a tool. The first part of the questionnaire included questions about the demographics of the respondents, and the second part includes five dimensions: a) Knowledge of the 4IR, b) Use of devices in personal life, c) Use of devices at the workplace, d) Familiarity with software and programs and e) Familiarity with emerging technologies. In total, all five dimensions consisted of 52 questions. Participants were asked to answer on a five-point Likert scale. The random sampling procedure was followed by the researchers in order to ensure the representativeness of the sample. 422 teachers responded out of the 2.328 teachers who served during the school year 2020-2021, with a response rate of 18.12%.

The data were encoded and analyzed with the statistical software SPSS 28.0 for Windows. A univariate frequency distribution analysis was performed individually and as a whole. Mean values (MV) and standard deviations (SD) were used for the descriptive analysis of the quantitative variables regarding the perceptions of the participating teachers about the 4th Industrial Revolution and knowledge. The regularity test (One-Sample Kolmogorov-Smirnov Test) of the variables showed that there was no normal distribution ($p = 0.000 > 0.05$). Spearman non-parametric double-sided correlation control was used to test the correlation of the variables.

Regarding the reliability of this study, a pilot research with 30 participants was conducted in order to spot any errors, shortages or misunderstandings in participants' answers. Also, the researcher checked if the answers of the participants were reliable according to the literature review. The reliability check of the questionnaire ranged from 0.777 to 0.951 for the five dimensions. For the whole scale the reliability index also showed very satisfactory results (Cronbach's alpha = 0.953) (table 1.)

Table 1
Cronbach's Alpha

	Dimensions	Number of statements	Cronbach's Alpha
4IR and knowledge	Knowledge of 4IR	9	0,948
	Use of devices in personal life	8	0,736
	Use of devices at workplace	8	0,777
	Familiarity with software and programs	11	0,896
	Familiarity with emerging technologies	16	0,951
	Total	52	0,953

A significant feature of research design also involves ethical issues (Tangen, 2014). Researchers should follow some rules in order to protect all of the participants (Babbie, 2011; Hammersley & Traianou, 2014). This research adopted the procedural and relational ethics as proposed by Tracy (2010). Procedural ethics encompasses the idea that the participants were informed of confidentiality, voluntary participation as well as the content and nature of the research, along with the ability to withdraw at any time. Moreover, informed consent was achieved by their voluntary participation, given the circumstances and the digital form of the questionnaire, in advance by their deciding to fill in a form forwarded to them and after having received the explanatory message regarding the aforementioned issues. Due to the difficult circumstances, there was not a signed consent form. Regarding relational ethics, mutual respect and dignity of both the researcher and the participants was assured. Both parties were mindful and respectful of each other's. Lastly, directing or influencing their answers was avoided. On the contrary, they were free to express themselves however they felt appropriate.

RESULTS

Regarding the demographic data of the sample, 66.1% are female and 33.9% are male. Regarding their age, 30.9% are between 41-50 years old, 27.5% between 51-55 years old and 18.9% between 31-40 years old. Regarding their additional studies, 34.3% have a master's degree, 4.3% have a doctorate, 8.2% have a second degree, while 30.5% state that they have something else. In terms of employment, the majority (74.2%) are permanent, and 9.5% have a position of responsibility (Managers-Deputy Managers). Regarding the years of service, 33% have 26 years and more, 23.6% are between 16-20 years old, 17.2% between 11-15 years old, 10% between 21-25 years old, 8.2 % between 6-10 years. Regarding their studies level in Information and Communication Technologies, 41.6% have the 1st level (Beginning), 48.1% have the 2nd level (advanced), whereas 1.7% do not have a relative certification at all.

Regarding their knowledge on the 4th Industrial Revolution, the mean value (M.V.) of the answers (table 2) ranges from 2.8 (enough) to 4.2 (a lot) with a total M.V. = 3.1 (enough). The teachers in the sample seem to know a lot what the 4th Industrial Revolution is about, its impact on their workplace, the new roles emerging, the cognitive and social skills required in order to adapt to new data. It is noteworthy that they know a lot (3.6) about the changing nature of work due to the intense technological changes and recognize a lot (4.2) the value of lifelong learning.

Table 2
Distribution of answers for knowledge of the 4IR

	Not at all	A little	Enough	A lot	Too much	M.V.	S.D.	
	Percentage %							

I know what 4IR is.	9,0	17,1	24,6	30,3	19,0	3,33	0,059
I am aware of its impact on my workplace.	8,5	22,3	32,2	24,2	12,8	3,10	0,056
I am aware of the new roles emerging in my workplace due to the 4IR.	9,0	27,5	29,9	21,3	12,3	3,00	0,056
I am aware of the required cognitive skills.	11,4	24,2	26,1	24,2	14,2	3,06	0,06
I am aware of the required social skills.	12,3	27	27,5	19,0	14,2	2,96	0,06
I know what kind of skills are required to adapt to new data.	11,8	24,2	24,6	26,5	12,8	3,04	0,06
I know that the nature of work is changing.	4,3	9,0	24,6	31,3	30,8	3,75	0,054
I recognize the value of lifelong learning.	2,8	3,3	14,2	25,6	54	4,25	0,049
I know how I will be ready to handle the changes brought about by the 4IR.	10,0	18,0	33,2	22,7	16,1	3,17	0,058
Total						3,30	0,048

Regarding the use of devices in personal life (table 3), the mean value of the answers of the participants ranges from a little (1.8) to a lot (4.2) with a total average value of 2.9 (enough). The devices that use a little (1.8-2.2) are the interactive whiteboard and the mp3 player. They use e-books, tablets and projectors at moderate levels (2.5-2.6). They use desktop computers enough (3.3) and laptops and smart-phones a lot (4.1-4.2).

Table 3
Distribution of answers for Distribution of answers for use of devices in personal life

	Not at all	A little	Enough	A lot	Too much	M.V.	S.D.
	Percentage %						
Desktop computer.	19,4	8,5	12,8	14,2	45,0	3,57	0,077
Laptop	6,2	5,7	8,1	16,1	64,0	4,26	0,058
Tablet	41,2	11,4	12,8	14,7	19,9	2,61	0,078
Smartphone	10	3,3	14,7	18,5	53,6	4,02	0,064
E-book	50,2	12,3	14,7	11,8	10,9	2,21	0,07
Mp3 Player	58,8	16,1	11,8	4,3	9,0	1,89	0,063
Interactive whiteboard	58,8	12,3	12,3	10,4	6,2	1,93	0,063
Projector	34,6	11,4	15,6	16,1	22,3	2,8	0,077
Total						2,91	0,041

Regarding the use of devices in the workplace (table 4), the average value of the respondents' answers ranges from a little (1.7) to enough (3.5) with a total mean value of 2.5 (moderate levels). The devices that use a little (1.7-2.1) are the interactive whiteboard, the mp3 player, the e-book and the smart-phone. They use projectors, desktop computers and laptop several (3.2-3.5).

Regarding the familiarity with software, programs and emerging technologies, the average value of the answers of the teachers of the sample ranges from 1.2 (not at all) to 4.6 (too much) with the total average value being 2.4 (little) . They are very (3,7-4,3) familiar with Skype, Google drive, Youtube video, Facebook, Excel and Power point. Very (4,6) are familiar with Word. Many (2,6-3,1) are familiar with Dropbox, Blog and Wiki. Unlike Facebook, Twitter is little familiar with and used (2,2). Regarding the use of devices in the workplace (table 4), the average value of the respondents' answers ranges from a little (1.7) to enough (3.5) with a total mean value of 2.5 (moderate levels). The devices that use a little (1.7-2.1) are the interactive whiteboard, the mp3 player, the e-book and the smart-phone. They use projectors, desktop computers and laptop several (3.2-3.5).

Table 4
Distribution of answers for Distribution of answers for use of devices in workplace

	Not at all	A little	Enough	A lot	Too much	M.V.	S.D.
	Percentage %						
Desktop computer	12,3	11,4	15,2	12,3	48,8	3,74	0,071
Laptop	12,8	11,8	15,2	20,4	39,8	3,63	0,07
Tablet	63,5	12,3	6,2	9,5	8,5	1,87	0,066
Smartphone	46,4	11,8	14,7	9,0	18	2,40	0,076
E-book	59,7	13,7	10,9	7,6	8,1	1,91	0,064
Mp3 Player	74,9	10,9	7,1	2,8	4,3	1,51	0,051
Interactive whiteboard	44,1	13,3	14,2	16,1	12,3	2,39	0,072
Projector	12,3	11,4	14,7	20,9	40,8	3,66	0,069
Total						2,64	0,042

Regarding the familiarity with software, programs and emerging technologies (tables 5, 6), the average value of the answers of the participants ranges from 1.2 (not at all) to 4.6 (too much) with the total average value being 2.4 (a little). They are familiar with Skype, Google drive, Youtube video, Facebook, Excel and Power point a lot (3.7-4.3). They are also familiar with Word a lot (4.6), and with Dropbox, Blog and Wiki enough (2.6-3.1). On the contrary they use Twitter a little (2.2). It is noteworthy that the familiarity with emerging technologies is at low levels: a little (1.5-2.0) for artificial intelligence, robotics, the Internet of Things, wearable devices, virtual reality, haptics, simulation, big data analytics, mobile computing, cloud computing, autonomous vehicles and robots, not at all (1.2-1.4) with nanotechnology, quantum computing, augmented reality, distributed ledger systems and additive manufacturing.

Table 5
Distribution of answers for familiarization with software and programs

	Not at all	A little	Enough	A lot	Too much	M.V.	S.D.
	Percentage %						
Skype	8,5	9,5	10,0	25,1	46,9	3,92	0,064
Google drive	7,1	14,2	11,4	20,4	46,9	3,86	0,065
Dropbox	23,2	11,8	12,8	19,9	32,2	3,26	0,077
Facebook	19,0	11,4	11,4	19,0	39,3	3,48	0,076
Twitter	49,8	18,5	8,5	8,1	15,2	2,20	0,073
Youtube video	1,9	4,7	10,9	28,0	54,5	4,28	0,047
Word	3,3	2,4	17,5	76,8	3,3	4,68	0,033
Excel	3,8	6,2	10,9	25,1	54,0	4,19	0,053
Powerpoint	2,4	2,4	8,5	19,0	67,8	4,47	0,045
Blog	20,9	15,2	15,6	20,9	27,5	3,19	0,073
Wiki	27,0	11,4	17,5	22,7	21,3	3,00	0,074
Total						3,74	0,044

Table 6
Distribution of answers for familiarization with emerging technologies

	Not at all	A little	Enough	A lot	Too much	M.V.	S.D.
Artificial intelligence	55,9	19,4	12,8	9,0	2,8	1,83	0,055
Robotics	66,8	19,0	10,0	2,8	1,4	1,53	0,043
Nanotechnology	77,7	12,8	7,6	1,9	77,7	1,34	0,034
Quantum computational biotechnology	52,1	16,6	16,6	10,9	3,8	1,98	0,059
Internet of Things	49,3	18,0	16,1	11,4	5,2	2,05	0,061
Wearable συσκευές	58,3	17,1	13,3	7,6	3,8	1,82	0,056
Augmented reality	37,4	29,9	15,6	12,8	4,3	2,17	0,058
Virtual reality	70,1	13,3	10,4	2,8	3,3	1,56	0,049
Haptics	40,8	20,9	16,1	12,8	9,5	2,29	0,066
Simulation	76,8	12,3	5,2	3,3	2,4	1,42	0,044
Distributed ledger systems.	63,0	16,6	10,9	5,7	3,8	1,71	0,054
Big data analytics	50,7	20,9	15,6	8,1	4,7	1,95	0,058
Mobile computing	52,6	19,4	10,4	8,1	9,5	2,02	0,065
Cloud computing	70,1	15,6	7,1	4,7	2,4	1,54	0,048
Autonomous vehicles and robots	77,3	13,3	6,2	1,4	1,9	1,37	0,04
Additive manufacturing	52,1	21,8	15,6	8,1	2,4	1,87	0,053
Total						1,78	0,041

According to the answers of the participants, statistically significant correlations emerge with the bilateral Spearman control between the individual dimensions (table 7). Specifically:

a) knowledge of the 4th Industrial Revolution with the use of devices in personal life ($\rho = 0.328$, $p\text{-value} = 0.000 < 0.01$), b) knowledge of the 4th Industrial Revolution with the use of devices in the workplace ($\rho = 0.327$, $p\text{-value} = 0.000 < 0.01$), c) knowledge of the 4th Industrial Revolution with the familiarity with software and programs ($\rho = 0.416$, $p\text{-value} = 0.000 < 0.01$), d) knowledge of the 4th Industrial Revolution with the acquaintance with emerging technologies ($\rho = 0.399$, $p\text{-value} = 0.000 < 0.01$), e) the use of devices in personal life with the use of devices in the workplace ($\rho = 0.673$, $p\text{-value} = 0.000 < 0.01$), the use of devices in personal life with the familiarity with software and programs ($\rho = 0.600$, $p\text{-value} = 0.000 < 0.01$), h) the use of devices in personal life with familiarity with emerging technologies ($\rho = 0.441$, $p\text{-value} = 0.000 < 0.01$), j) the use of devices in the workplace with the familiarity with software and programs ($\rho = 0.501$, $p\text{-value} = 0.000 < 0.01$), k) the use of devices in the workplace with the familiarity with emerging technologies ($\rho = 0.436$, $p\text{-value} = 0.000 < 0.01$) and l) familiarity with software and programs with familiarity with emerging technologies ($\rho = 0.601$, $p\text{-value} = 0.000 < 0.01$).

Table 7
Spearman Correlations

	1	2	3	4	5
Correlation Coefficient					
Knowledge on 4IR (1)	1	0,328**	0,327**	0,416**	0,399**
Sig. (2-tailed)		0,000	0,000	0,000	0,000
N	422	422	422	422	422
Correlation Coefficient					
Devices in personal life (2)	0,328**	1	0,673**	0,600**	0,441**
Sig. (2-tailed)		0,000	0,000	0,000	0,000
N	422	422	422	422	422

	Correlation Coefficient					
Devices in workplace (3)		0,327**	0,673**	1	0,501**	0,436**
	Sig. (2-tailed)	0,000	0,000		0,000	0,000
	N	422	422	422	422	422
	Correlation Coefficient					
Familiarity with software & programs (4)		0,416**	0,600**	0,501**	1	0,601**
	Sig. (2-tailed)	0,000	0,000	0,000		0,000
	N	422	422	422	422	422
	Correlation Coefficient					
Familiarity with emerging technologies (5)		0,399**	0,441**	0,436**	0,601**	1
	Sig. (2-tailed)	0,000	0,000	0,000	0,000	
	N	422	422	422	422	422

***. Correlation is significant at the 0.01 level (2-tailed).*

DISCUSSION

The context of the 4th Industrial Revolution undoubtedly affects significantly the field of education, where emerging digital technologies are coming to transform the way we teach, the way we learn and the current role of the educator. Future education systems will be judged by whether and how well they can prepare students to function in the world of the 21st century, a world that requires a rich digital profile with skills in artificial intelligence, robotics, internet of things, augmented reality, virtual reality, 3D printing, smart factories etc (Bezuidenhout, 2018).

The findings of the present study show that the participants are moderately aware of the 4IR and the new roles emerging in the workplace, the new skills (social, cognitive) required to adapt and manage upcoming changes. They use moderately in their personal life devices (Desktop computer, Laptop computer, Tablet, Smartphone, E-book, Mp3 Player, Interactive whiteboard, Projector). The level of use of devices in the workplace is similarly moderate. They are also satisfactorily (a lot) familiar with the use of software and programs (Skype, Google drive, Dropbox, Facebook, Twitter, Youtube video, Word, Excel, Power point, Blog, Wiki). However, they are a little unfamiliar with emerging technologies (Artificial Intelligence, Robotics, Nanotechnology, Quantum Computing Biotechnology, Internet of Things, Wearable Devices, Augmented Reality, Virtual Reality, Tactile Technology, Simulation, Distributed Accounting Systems and large data processing, Mobile computing, Cloud computing, Autonomous vehicles and robots, Prosthetics) related to the 4IR. There are also statistically significant positive correlations among the dimensions (Knowledge of the 4IR, Use of devices in personal life, Use of devices in the workplace, Familiarity with software and programs, Familiarity with emerging technologies) regarding the 4IR and knowledge.

The aforementioned findings are in accordance with those of Panagiotopoulos (2020) who had as a target group the teachers of primary education. In particular, teachers use desktop computer and projectors in their personal life enough, laptops and smart-phones a lot. Likewise, the use of technology devices in the workplace is at moderate levels.

Familiarization of participants with software programs is to a small extent, a finding that agrees with other researchers as well. For instance the European Commission's research (2019) shows that teachers feel more confident to perform basic activities (e.g. generating text using word processing software) and less confident about more complex tasks (e.g. programming/coding). Teachers use mostly technology for reasons of communication, personal feedback and support to students, to send or to save a file, and to search for information on the internet. Similar findings were highlighted by Rahman (2014), who measured teachers' readiness to integrate the Virtual Learning Environment as part of e-learning. Teachers are not yet ready to use e-learning in schools, although some schools have the appropriate equipment. Similarly, research by Abukhattala (2016) highlighted the lack of readiness of teachers to use technology in teaching English.

IMPLICATIONS

This study through its findings, as reflected from teachers' perceptions, hopes to contribute to a further understanding of education reality and highlight the possibilities and needs of school operation in the new digital environment. In addition, it could contribute to the development of a fruitful dialogue, reflection and operate as a stimulus not only for the orientation of the school transformation but also for the initiatives that the official state should take to create the conditions for successful implementation. However, as the literature proves, it is inevitable for almost every study to come up against limitations and shortcomings, no matter how organized or well-prepared it may be (Hammersley & Traianou, 2014). This particular research is no exception. The main limitation of the research is that the results are not generalizable for the whole population.

Regarding future exploration, this study could constitute a starting point for further relevant studies that may examine the issue more deeply. For instance, a qualitative approach could be followed by using semi-structured interviews. Finally, the research took place in the Region of Western Greece, so a sample of educators who teach at other geographical regions both in primary and secondary education might be helpful in order to depict more general aspects and perceptions.

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THE IMPACT OF THE TECHNOLOGY OF THE 4TH INDUSTRIAL REVOLUTION ON STUDENTS, EDUCATION AND SOCIETY

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ABSTRACT

The purpose of this research study is to investigate the perceptions of Secondary Education Teachers of the Western Greece Region on the 4th Industrial Revolution and the impact of technology on pupils and education. The sample of the survey is from 422 teachers and the plausibility check of the questionnaire ranges from 0,851 to 0,881 for both dimensions. According to the results of the survey, respondents express a positive attitude towards the benefits of technology in education, learning, communication and society. However, technology can also have negative effects related to unemployment, security, cyber-bullying and societal conflicts.

Key Words: 4th Industrial Revolution, technology, students, education.

4th INDUSTRIAL REVOLUTION AND EDUCATION

In the 4th Industrial Revolution, technologies are merged and there will be no fixed lines between the physical, digital and biological aspects of life. The impact on every aspect of life (economy, industry, agriculture, medicine) will be major (Min et al., 2019). Since the beginning of the 4th Industrial Revolution, technology has been restructuring and transforming the teaching and learning methods in the field of education through digital technology. The availability and conditions of the basic characteristics required for the transition to the 4th Industrial Revolution of the learning process have not been sufficiently studied (Oke & Fernandes, 2020). The exact impacts of the 4th Industrial Revolution on the society are still unknown. It is certain though, that there is a need for education to respond quickly to the progress of technological innovation (Penprase, 2018: 217). New technologies will have a significant impact on learning opportunities, educational policies and teaching (Al Lily et al., 2018). The World Economic Forum (2018) stated that 65% of school pupils today will be working in jobs that do not exist yet and 47% of the current jobs will have been automated in the next decade. These data motivate the experts and teachers to investigate more and more, but also to propose methods and strategies to ensure quantitative and qualitative learning, in order to help learners cope with the future (Schwap, 2016). The 4th Industrial Revolution will accelerate the changes in the workplace and it

is necessary to empower people, so as to acquire education and career development strategies (Reaves, 2019). Organisations must have a successful strategy and adopt the new products of the 4th I.R., such as large data, block chain technology and artificial intelligence in education instead of following the traditional procedures (Shahroom & Hussein, 2018; Ceylan, 2020). The alignment of education systems through the use of the 4th I.R. technologies brings Education 4.0 (Educ4) to the fore, whose dominant elements are the personalization of the learning process and flexible learning opportunities regardless of the location (Ally & Wark, 2019; Salmon, 2019). Janikova & Kowalikova (2017) consider that the key role in the future can be summarized in ensuring a long-term learning process and providing individuals with experience on market dynamics and socio-economic changes. According to Butler-Adam (2018: 1) one of the impacts on education has to do with the curricula, teaching and learning processes.

As regards teaching and learning, online teaching and the exploring use of artificial intelligence call for new guidelines in order to provide a theoretical basis for digital pedagogy (Penprase, 2018: 221). The use of the digital technology advocated by the 4th I.R. is beyond the use of computers. In order for it to be effective in improving the learning experience of pupils, it should be compatible with a student-centered approach (Oke & Fernandes, 2020). Digital literacy is a key factor for students to develop the adaptive capacities needed to participate in the global digital society, to benefit from the digital economy, to acquire new employment opportunities, innovation, creative expression and social inclusion (Brown-Martin, 2017:7). The successful implementation of the 4th Industrial Revolution in education will require the appropriate skills. Gray (2016) argues that in the near future, around 35% of the skills considered important in the current labor market will have changed. Therefore, skills are needed to implement, manage and co-operate with the new technology (Butler-Adam, 2018: 1). The field of education requires flexibility, social intelligence and creativity; it is difficult to automate. The required set of skills is very important for people to benefit from the potential of the new technology and to protect themselves from the upcoming changes (Zervoudi, 2019).

RESEARCH METHODS

The purpose of this survey is the investigation of the views of Secondary Education teachers of the Region of Western Greece on the 4th Industrial Revolution (4IR) and the impact of technology on pupils and education. The research questions raised, on the basis of the purpose of this research study, are:

- What are the perceptions of the S.E. teachers regarding the impact of Technology on school pupils in the light of the 4th Industrial Revolution?
- What are the views of the S.E. teachers on the impact of Technology on Education and Society in the light of the 4th Industrial Revolution?
- Is there a correlation between the views of the S.E. teachers on the impact of Technology on pupils, Education and the Society and the demographic characteristics (sex, years of service, level of study, ICT knowledge level, etc.)?

For the survey, the quantitative research approach using a questionnaire was selected. The first part of the survey included questions about the demographic characteristics of the respondents. The second part consists of two dimensions: (a) Technology and students and (b) Technology, Education and Society overall, and the two dimensions consist of 31 questions. Participants were invited to respond to a five-degree Likert scale (1 =Not at all, 2 =A little, 3 =Enough, 4 =A lot, 5 =Too much).

The data collection took place in May-June 2021 using an electronic questionnaire (Google form) which was sent to the school districts of 44 Gymnasiums, 17 Vocational High Schools (EPAL) and 73 High Schools of the Western Greece Region. Out of the 2,328 teachers serving in the school year 2020-2021, 422 teachers responded, with a response rate of 18,12%. The data were encoded and analyzed using the statistical software SPSS 28.0 for Windows. The percentages, the frequencies of the average price and the standard deviation were calculated. The regularity of the variables and the indicators of curvature and distortion were verified using the Kolmogorov-Smirnov. The results showed that there is no normal distribution of the variables. The Mann-Whitney and Kruskal-Wallis non-parametric test was used to check the correlation of the variables.

With regard to the reliability of this study, a pilot survey with 30 participants was conducted, in order to identify any errors, deficiencies or misunderstandings in their replies. The plausibility check of the questionnaire for the two dimensions ranged from 0,881 to 0,805. On the overall scale the results were satisfactorily at 0,856. The nominal validity of the survey was checked on the basis of the mapping

table of the research tool in the individual dimensions (technology and learning, technology utilization in education) with the purpose of the research and the research questions (Bryman, 2017). In terms of ethics, in the beginning of the questionnaire, there was introductory note on the content of the research and its objective. There was also an explicit assurance that the respondents would participate voluntarily, that confidentiality and anonymity would be ensured and that the data would be used for research purposes exclusively.

RESULTS

Regarding the demographic data of the sample, 66.1% are female and 33.9% are male. Regarding their age, 30.9% are between 41-50 years old, 27.5% between 51-55 years old and 18.9% between 31-40 years old. Regarding their additional studies, 34.3% have a master's degree, 4.3% have a doctorate, 8.2% have a second degree, while 30.5% state that they have something else. In terms of employment, the majority (74.2%) are permanent, and 9.5% have a position of responsibility (Managers-Deputy Managers). Regarding the years of service, 33% have 26 or more years of experience, 23.6% have between 16-20 years, 17.2% have between 11-15 years, 10% between 21-25 years, 8.2 % between 6-10 years of experience. Regarding their studies level in Information and Communication Technologies, 41.6% have the 1st level (Beginning), 48.1% have the 2nd level (advanced), whereas 1.7% do not have a relative certification at all.

With regard to technology and learning, the average of the respondents' responses ranges from 3,3 (a lot) to 3,6 (very much) with an overall average of 3,5 (very much). Respondents consider that using technology, students will have much more (3.5-3.6) opportunities to learn at different times and at different locations as well as learning with tools adapted to their individual capabilities. The learning process will be based very much (3.5) on work plans / project and field experiences, that is to say activities outside the school auditorium, that will be associated and complement the content of a lesson. The way students are assessed will change radically (very much -3.6) and the guidance provided by the teacher will gain more and more importance (very much -3.6). Furthermore, students (a lot – 3.4) will choose the devices themselves (e.g. tablet, laptop, smartphone, e-book reader), and will also choose the programs and methods with which they will learn. Finally, the pupils will be more and more involved, (a lot-3.3), in shaping their curriculum.

Table 1
Answer distribution on technology and learning process

	M.V.	S.D.
1. Students will have more opportunities to learn at different times and in different locations.	3,73	0,047
2. Students will learn with tools adapted to their individual abilities.	3,70	0,049
3. Students will choose the devices themselves (e.g. tablet, laptop, smartphone, e-book reader), and will also choose the programs and methods with which they will learn.	3,53	0,054
4. The learning process will be based on work plans / projects.	3,67	0,052
5. Learning will also be based on field experiences, that is to say activities outside the school auditorium, that will be associated and complement the content of a lesson.	3,65	0,049
6. The way students are assessed will change radically.	3,86	0,049
7. Students will be more and more involved in shaping their curriculum.	3,24	0,055
8. The guidance provided by the teacher will gain more and more importance.	3,59	0,054
Total:	3,62	0,038

Technology correlations in learning with demographic characteristics

To check the correlation of demographic characteristics (gender, age, years of service, additional studies, ICT level, employment relationship / capacity of participants with their responses on the impact of technology on students and the learning process), The non-parametric correlation test of Mann-Whitney U has been carried out, to compare two sub-groups and the non-parametric correlation

test Kruskal-Wallis H has been used, to compare the average terms of more than two sub-groups of the sample, with a statistical significance level $\alpha = 0.05$ (5%, $p < 0,05$).

The Mann-Whitney U test shows a statistically significant difference [$U(152, 270) = 17770,000$, $p = 0,022$] regarding gender and their perception on the concepts of technology and learning process. Men agree more (mean rank = 229,59) compared to women (mean rank = 201,31) on the positive impact of technology on pupils and the learning process (Chart 1).

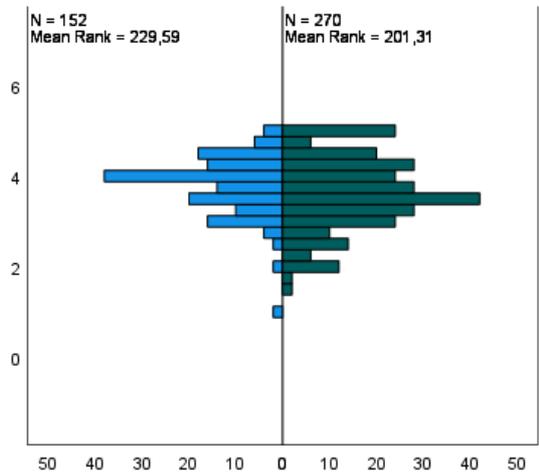


Chart 1: *Correlation of technology and learning with gender*

The Kruskal-Wallis H correlation control shows significant statistical difference in the perceptions of the impact of technology on pupils and learning process with the level of study ($\chi^2(3) = 15,898$, $p = 0,001 < 0,05$). Those with a masters agree more on the impact of technology on students and learning (mean rank = 224,48) than those with no additional studies (mean rank = 178,73) for the impact of technology on pupils and learning. Also, those who have a PhD (mean rank = 246,41) agree more on the impact of technology on pupils and their learning process than those who have a second degree (mean rank = 185,68) (Chart 2).

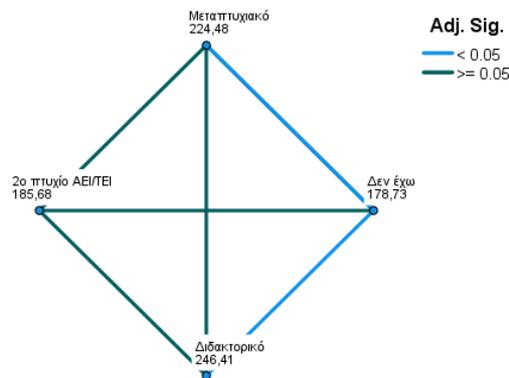


Chart 2. *Technology in students and learning by level of studies*

The Kruskal-Wallis H correlation control shows significant statistical difference ($\chi^2(2) = 38,106$, $p = 0,000 < 0,05$) on the perceptions about the impact of technology on pupils and learning and the ICT level. Those who have acquired a 2nd level degree on ICT agree more on the positive impact of technology on pupils and learning (mean rank = 241,70) than those who have not done so (mean rank = 114,50). Also, those who have acquired a 2nd level degree on ICT agree more on the positive impact of technology on pupils and the learning process (mean rank = 241,70) than those who have not acquired a 1st level degree (mean rank = 178,72) (Chart 3).

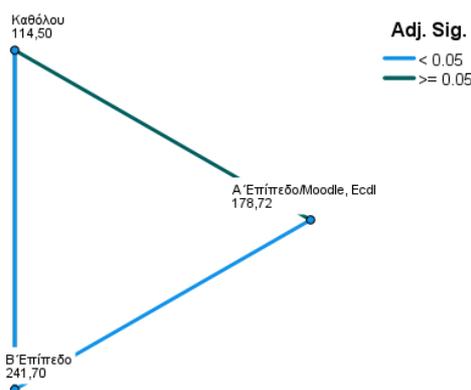


Chart 3. *Technology in students and learning with a degree on ICT*

The correlation between the other demographic characteristics (age, years of service, employment-status association) of the respondents with their answers about the impact of technology on pupils and learning does not indicate a significant statistical difference.

Utilization of technology in education

Regarding the utilization and use of technology in education, the average of the answers of the participating teachers ranges from 3.0 (a lot) to 4.1 (very much) with a total value of 3.7 (very much). The use of technology in education will benefit students, teachers and directors greatly (3.5-4), will affect the increase of the efficiency of the school unit and will lead to better learning outcomes as well as making the lesson more interesting and attractive for students while contributing significantly (3.6) to saving material resources. The utilization of technology will also contribute considerably (3-3,4) to improving the communication among the teachers, the pupils, the parents and the educational staff. The use of technology in education entails a much higher workload for teachers (3.8) and it will cause a high degree (3.9) of escalation of inequalities. Also, the use of technology is highly associated (3.7) with job reductions. It will raise a lot of (3.8) ethical issues, it will lead a lot (4.0) to the creation of different and demanding professions. It can greatly increase (3.9) the social disparities, it could allow the spread of false news to a great extent (4.0) and threaten significantly (3.8) the individuality and privacy. Moreover, the use of technology is significantly linked (3.4) to the feeling of insecurity and danger, it will allow cyber-bullying and hate speech to grow (3.4) and it will make the world a lot (3.3) more complex, unstable and uncertain. Finally, technology will homogenize sufficiently (3.4) people's views and polarize societies.

Table 2
Answer distribution on the utilization of technology

	M.V.	S.D.
1. The utilization of technology in education benefits students.	4,05	0,049
2. The utilization of technology in education benefits teachers.	4,11	0,045
3. The utilization of technology in education benefits principals.	4,16	0,045
4. The utilization of technology in education affects the increase of the efficiency of the school unit.	3,79	0,055
5. The utilization of technology in education will lead to better learning outcomes.	3,58	0,055
6. The utilization of technology in education contributes to saving material resources.	3,76	0,057
7. The utilization of technology in education contributes to improving the communication between teachers and parents.	3,67	0,058
8. The utilization of technology in education contributes to improving the communication between teachers and students.	3,52	0,059
9. The utilization of technology in education contributes to improving the communication between teachers and educational staff.	3,55	0,058
10. The utilization of technology in education makes the lesson more interesting and appealing to students.	3,91	0,05

11. The utilization of technology in education entails a much higher workload for teachers.	3,97	0,053
12. The utilization of technology in education can cause escalation of the inequalities.	3,70	0,054
13. The utilization of technology in education is associated to job reductions.	3,34	0,064
14. The utilization of technology in education can raise a lot of ethical issues.	3,67	0,058
15. The utilization of technology is s linked to the feeling of insecurity and danger.	3,16	0,06
16. The utilization of technology can lead to the creation of different professions.	4,20	0,039
17. The utilization of technology can lead to the creation of demanding professions.	3,95	0,044
18. Technology could increase the social disparities.	3,78	0,055
19. Technology could allow cyber-bullying and hate speech to grow.	3,44	0,057
20. Technology could allow the spread of false news.	4,05	0,049
21. Technology could make the world more complex, unstable and uncertain.	4,11	0,045
22. The utilization of technology threatens the individuality and privacy.	4,16	0,045
23. Technology could homogenize people's views and polarize societies.	3,79	0,055
Total:	3,72	0,024

Correlations of technology utilization in education with demographic characteristics

To check the correlation between the demographic characteristics (gender, age, years of service, additional studies, ICT level, employment-status association) of the participants and their responses about the impact of technology on society and education, the non-parametric correlation control Kruskal-Wallis H was carried out to compare the average terms of more than two sub-groups of the sample, with a statistical significance level $\alpha = 0.05$ (5%, $p < 0,05$).

Kruskal-Wallis H correlation control shows significant statistical difference ($\chi^2 (2) = 8,978$, $p = 0,011 < 0,05$) in the perceptions of the impact of technology on society and education with the ICT level. Those who have acquired a 2nd level degree of ICT agree more on the impact of technology on society and education (mean rank = 225,82) than those who have not done so (mean rank = 160,17). Also, those who have acquired a 2nd level degree on ICT agree more on the impact of technology on society and education (mean rank = 225,82) than those who have not acquired a 1st level degree (mean rank = 196,54). (Chart 4).

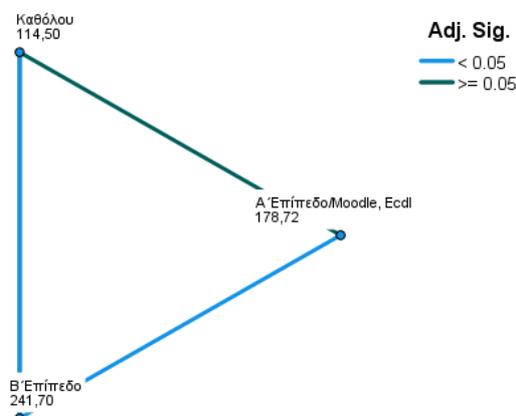


Chart 4. Technology in students and learning with a degree on ICT

The correlation between the other demographic characteristics (gender, age, years of service, additional studies and employment-status association) of the respondents with their answers about the impact of technology on the society does not indicate a significant statistical difference.

DISCUSSION

The findings of this research, regarding the perceptions of the participants about the impact of technology, consider that students will have more learning opportunities according to their potential and individualized programs. Learning will increasingly be based on work plans and the educator will increasingly gain a more leading role. Regarding the impact of technology on education and society, its utilization will greatly benefit students, parents, and principals. It will greatly benefit the learning process and improve communication between the students and educators. The research findings of Panagiotopoulos (2020) on primary school teachers are equivalent, according to which the use of technology in education will help teachers, will make the lesson more attractive and will contribute to the improvement of the communication among the teachers, students, parents and training executives. Also, Beetham and Sharpe (2013) consider that digital technology does not only facilitate the interaction between teachers and pupils, but it also increases and transforms the process of teaching and learning. However, research participants are hesitant about the negative effects that technology may have.

They consider that the use of technology may cause an escalation of the inequalities, may raise moral issues, may intensify the social disparities, and threaten individuality and privacy. The use of technology in education and society is also linked to job reductions, with the sense of insecurity and risk, cyber-bullying, hate speech, homogenization of people's views and polarization of societies. The findings of Panagiotopoulos' research (2020) are similar, in which research, caution is expressed in possible negative effects as far as jobs and the social problems that may arise are concerned. In a similar way, Zervoudi (2019) highlights the risks posed by the 4th I.R., risks related to job reductions, increased poverty, invasion of privacy, climate change, use of technology for illegal activities, etc., and highlights the appropriate policies that need to be implemented to protect from any unforeseen consequences.

As to the correlation between the perceptions of the participants for the impact of technology on pupils, education and society with demographic characteristics, it has shown that women are more strongly in line that technology has a positive effect on students than men are. Those who have a higher level of education agree more about the positive impact of technology on students. Finally, those who have a higher level of knowledge in ICT agree to a greater extent on the effects of technology on education and society.

LIMITATIONS – SUGGESTIONS

The present survey has investigated the views of Secondary Education teachers in the region of Western Greece on the 4th Industrial Revolution (4th I.R.) and the impact of technology on students and education.

The findings of the investigation could not be generalized as the sample of research is relatively small, related only to Secondary Education teachers in the Western Greece. It is proposed that the research be extended using other research tools and to include teachers from other schools and to be extended to Primary Education. Also, the sample could concern students, parents and educators. Therefore, a comparative study and evaluation could be carried out with findings on the perception and attitudes about the skills they consider necessary and important for the use of technology in education and the learning processes.

This research aspires to contribute to the emergence of issues and to the dialogue on the potentials and the risks associated with the upcoming changes of the 4th I.R. in all areas. At the same time, it aims to highlight the need for teachers to adapt to the new reality with new skills and the use of technology in education with a focus on the students and his needs. Higher education professionals and policy makers could define future strategies and policies to improve teachers' readiness and prepare them for any future professional skills. However, in addition to the need for the professional and digital readiness of teachers and the transformation of the educational process, a culture of lifelong learning, practical education and adaptation to new data should be fostered.

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HUMAN RESOURCES DURING PANDEMIC

BASIC INDICATORS OF QUALITY PROCESSES IN SPECIAL EDUCATION SCHOOL UNITS

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ABSTRACT.

This research starts with the definition of Total Quality Management and a theoretical explanation of basic principles of quality processes is given. The analysis continues with the need for investigating the implementation of Total Quality Management in School Units of Special Education. A brief presentation of the Model of Excellence of the European Quality Assurance Agency is also given since this constitutes the basic methodological tool of the research. The research methodology is presented as well as the statistical tools, followed by the results of the statistical analysis and the conclusions. The research findings attribute the significance Leadership and Human Resources as the most prominent quality criteria for the special education school units.

Key Words: Total Quality Management, EFQM, Special Education School Units, Quality Criteria.

INTRODUCTION

Total Quality Management (TQM) constitutes a management framework which has as its ulterior goal the improvement through a continuous and dynamic process that spots the positive points, the weaknesses and the needs connected with the work of the school unit. In this process, the majority of the school community is involved, and it is considered the foundation of the proper scheduling and planning of educational work, as well as the implementation of activities that contribute to the total improvement of the educational organization.

Education communities and organizations are characterized by complexity, containing people with different priorities, needs and attitudes, which do not always converge (Saiti, 2012). In this framework, TQM may be the right basis for the improvement of educational practices and quality. But what is quality really? Quality is considered as an essential element for the improvement of a school unit. Nawelwa et al. (2015) claim that many of the principles referred to TQM have been applied to higher education and this context has started to be implemented in mainstream high schools, in spite of the fact that its users are not familiar with the term "Total Quality Management".

However, it seems that literature on the subject remains limited in special education school units. Most publications focus on TQM implementation at mainstream school units while its application at special education level appears to be very limited. This research therefore aims to exclusively examine TQM applications in special education school units. This study has as its main purpose to examine how leadership and human resources can contribute to the achievement of quality processes within the special education school units.

LITERATURE REVIEW

In recent years, educational policy at national and European level has focused on the educational organization as the most essential level at which it implements its decisions.

This includes issues concerning:

- The improvement of the educational organization
- The effectiveness of the educational organization
- The autonomy of the educational organization
- Social accountability by the educational organization
- The implementation of education policy based on evidence (Solomon, 1999).

Through the above processes the educational organization has the opportunity:

- To investigate the current situation in a collective way
- To identify the strengths and weaknesses of its operation
- To set the vision and its mission and all stakeholders within the organization to commit to this vision
- To monitor the achievement of objectives, review and develop action plans for improvement.

The improvement of a special education school unit and consequently its effectiveness cannot be achieved if the school does not have a clear knowledge of its strengths and weaknesses and if its goals are not in line with the current educational policy of the Ministry of Education. In other words, no improvement and self-efficacy of the organization -whether it is a general education organization or a special education organization- can be achieved unless it is first transformed into a learning organization.

Thus, the aim is to improve the quality of education through a process of continuous feedback. This theoretical framework goes hand in hand with the general philosophy of Total Quality Management and in fact, as shown in Figure 1, it plays an important role in the evaluation process for continuous improvement at all levels of the educational work and the pedagogical operation of the school (Petridou (2002).

Figure 1:

Levels of application of TQM in education (Source: Petridou, 2002: 59)



Consequently, self-evaluation is the cohesive link for all administrative and educational processes and the focal point for the formation of the internal educational policy of the school unit (Bush and Middlewood, 2006).

Leadership and human resources are clear indicators of the quality of an effective school. Leadership is considered a key element in an educational organization, which may be able in to define its task and fulfill its mission. The vision and commitment of senior management for quality education should be conveyed to all involved people and leadership should encourage its members to strive for continuous improvement. Therefore, the leader should respect all participants in the pedagogical function of the school (McBeath, 2005), while at the same time he/she should take into account the importance of the individuality of each teacher. This can be achieved by providing motivation according to the personal needs, ambitions and skills of the teacher and not based on the personal perceptions and stereotypes of the principal (Bush and Middlewood, 2006).

In addition, the principal, as the leader of the educational organization, must define the purpose of the school, which must be visible and understandable for teachers, in order to develop motivation (Fidler, 1997).

Another key element for the effectiveness of leadership in an educational unit is the school culture, in other words the system of common values, views and principles that are inherent in a group of people or a community. The principal must therefore evaluate the school culture and persuade teachers to contribute to positive changes in the specific culture, in order to motivate cooperation between colleagues (Trice and Beyer, 1993).

In addition, the leader of an effective school must have professional skills that derive from his scientific training and administrative experience, but also perceptual skills so that he/she is able to observe, identify weaknesses, manage crises and provide freedom for innovative actions, autonomy within the school unit (Bush and Middlewood, 2006). Moreover, the leader's high emotional intelligence improves working relationships, develops a sense of job satisfaction and helps to effectively manage and organize the business (Porter, 1985).

As far as the human resources are concerned, developing trained teachers that will acquire the knowledge and cultivate the necessary skills to promote quality education is a priority for Agenda 2030 and the 17 Global Sustainable Development Goals (United Nations Regional Information Center, 2022). Teachers need to be in constant interaction with the students, parents, stakeholders and the wider social context. In addition they need to attend trainings related to their subject matter and pedagogical methods, as well as to participate in school networks in order to exchange good practices within the educational community. Teachers should also take creative and innovative action to provide quality education (United Nations Regional Information Center, 2021).

Finally, according to the National Strategic Reference Framework (Partnership Agreement, 2022) and in the framework of the Operational Program "Human Resources Development, Education and Lifelong Learning", the improvement of the quality and efficiency of the educational system is set as a priority. In particular, interventions concerning school structures and the quality of education take place. Thus, staff recruitment programs specializing in Special Education and the personalized support of students with disabilities and / or special educational needs are implemented. The purpose of these programs is to reduce early school leaving and to promote equal access to good quality education.

Therefore, the literature review in combination with the current conditions for the provision of quality education, led to the formulation of the following research questions, regarding the criteria of leadership and human resources:

- What is the correlation between the leader's personality and his contribution to the quality processes in a special education school unit?
- To what extent are human resources both as individuals and as groups encouraged to be developed as active teachers and support the strategic plan of the educational organization?

RESEARCH METHODS

The analysis conducted for this paper aims at investigating the degree of adoption of the TQM principles in Special Education School Units. This is implemented through the evaluation of the two key TQM criteria which are Leadership and Human Resources, as they are quoted in the European Excellence Model EFQM.

The European Excellence Model EFQM developed by the European Foundation for Quality Management (EFQM) is a tool that has nine criteria that provide an evaluation framework for organizations and companies. These criteria in the field of conditions are ‘leadership’, ‘people’, ‘strategy’, ‘collaborations and resources’, ‘processes’, ‘products’ and ‘services’, while in the field of results it concerns results for people, for customers, for society and business results (EFQM, 2021). Pupius (2005) created for the University of Sheffield Hallam a modified version of the European Model of Excellence tailored to the needs of academic institutions. The main purpose was this original questionnaire which can be used as a tool for self-assessment in educational institutions abroad (Pupius, 2005).

This original questionnaire which is a guide for self-assessment was adapted to Greek data by Prof. Petridou Eugenia (Koltsakis and Petridou, 2008). This questionnaire which is based on the above original questionnaire of TQM in education, was distributed to 30 teachers on a pilot basis, in order to ensure content and face validity.

The final version of the questionnaire is composed of two parts:

Part I gathers some personal information that might affect teachers’ answers. The questions are related to the gender, school service unit, years of professional experience.

Part II consists of 41 questions, 22 of them contain the TQM principles in terms of the variable “leadership” and 19 of them include the TQM principles in terms of the variable “human resources”. The answers range from “not at all” (1) to “very much” (5), implementing a normal Likert scale.

Descriptive statistics accrued from the collected quantitative findings such as frequencies and percentages were used to describe the data. The analyses were carried out through (SPSS) statistics software.

Finally, the inductive statistic, Chi-Square (χ^2) test of independence was implemented in order to calculate the statistical significance and correlation between the examined variables. The mathematical formula of the Chi-square test is:

$$\chi^2 = \sum_{i=1}^r \sum_{j=1}^c \frac{(O_{j,i} - E_{i,j})^2}{E_{i,j}}$$

Where: O_{ij} = Observed value of two nominal variables

E_{ij} = Expected value of two nominal variables

r = number of rows

c = number of columns

DF = Degrees of Freedom = $(r-1)(c-1)$

The value of 0.05 was used as the level of statistical significance.

RESULTS

The sample consisted of 148 special education teachers, 74.7% of whom work in primary and high special education schools and 25.3% work in inclusion context of primary and high general education school units, according to the data of Table 1.

Table 1
Distribution of answers related to School Service Unit

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Primary and High Special	109	73,6	74,7

Education					
Inclusion	Context	37	25,0	25,3	100,0
Total		146	98,6	100,0	
Missing	System	2	1,4		
Total		148	100,0		

Table 2 below shows that the school units belong mainly to the Regions of Central and Western Macedonia and specifically to a cumulative percentage of 67.3%, while 32.7% belong to the other regions.

Table 2
Distribution of answers regarding the district of the educational unit

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Central Macedonia	80	54,1	54,4	54,4
	West Macedonia	19	12,8	12,9	67,3
	Another region	48	32,4	32,7	100,0
	Total	147	99,3	100,0	
Missing	System	1	,7		
Total		148	100,0		

Frequencies and percentages related to background of 148 teachers are displayed in Table 3.1, Table 3.2, and Table 3.3. Regarding the age of the respondents (Table 3.1) and the years of professional experience (Table 3.2), the largest percentage of teachers, is 48% aged 35-44, followed by teachers aged 45-54 at a rate of 24.3%. This fact shows that the Schools of Special Education and Training are staffed mainly by young teachers, something which is confirmed by the years of total service of teachers.

Table 3.1
Distribution of answers related to age

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	25-34	31	20,9	20,9	20,9
	35-44	71	48,0	48,0	68,9
	45-54	36	24,3	24,3	93,2
	55-65	10	6,8	6,8	100,0
	Total	148	100,0	100,0	

In particular, as it is shown in Table 3.2, the cumulative percentage of 83.8% constitutes the majority of the surveyed teachers with up to 10-19 years of professional experience, which is in line with the age groups of the teachers who are mainly employed in special education.

Table 3.2
Distribution of answers related to years of professional experience

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1		,7	,7	,7
	0-9	49	33,1	33,1	33,8
	10-19	74	50,0	50,0	83,8
	20-29	20	13,5	13,5	97,3
	30 ή π	4	2,7	2,7	100,0
	Total	148	100,0	100,0	

A notable feature regarding the demographic characteristics of the sample and which will allow us to investigate further correlations regarding the quality criteria of an educational organization, is the distribution of the answers of the respondents on whether they have relevant knowledge with the administration of educational units.

More specifically, as it is shown in Table 3.3, 39.5% of the surveyed teachers have knowledge related to the administration of educational units while 60.5% have no relevant knowledge.

Table 3.3
Distribution of answers regarding knowledge in the administration of educational units

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	I have relevant knowledge	58	39,2	39,5	39,5
	I do not have relevant knowledge	89	60,1	60,5	100,0
	Total	147	99,3	100,0	
Missing	System	1	,7		
Total		148	100,0		

According to the frequency table 4, it was found that 39.9% of teachers answered that the leader can contribute moderately to the formation of quality conditions through the planning and assignment of group activities but also because he is a personal example.

Table 4
Planning and assigning group activities by the manager

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Enough	59	39,9	39,9	39,9
	Minimum	35	23,6	23,6	63,5
	Not at all	15	10,1	10,1	73,6
	Very much	16	10,8	10,8	84,5
	Very	23	15,5	15,5	100,0
	Total	148	100,0	100,0	

At the level of human resources as it turns out from the frequency table 5, it was found that the leader according to 36.5% can facilitate moderately collaborations to upgrade the teaching process.

Table 5
Upgrading the teaching process (eg computer use, lesson process design) by the principal

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Enough	54	36,5	36,5	36,5
	Minimum	24	16,2	16,2	52,7
	Not at all	7	4,7	4,7	57,4
	Vey much	29	19,6	19,6	77,0
	Very	34	23,0	23,0	100,0
	Total	148	100,0	100,0	

Clearly, this modest attitude of teachers is confirmed by the fact that Special Education School Units are state-owned educational organizations, where the funds for providing resources to upgrade the educational process are provided by the state authorities (Ministry of Education and Religions, Ministry of Interior). Therefore, even if the school principal wants to further promote quality processes, he/she cannot act to a large extent voluntarily and with financial self-sufficiency.

It is noteworthy to refer to the comparative analysis and the average values of leadership and human resources, which demonstrate the quality characteristics for each one of the two criteria. It was calculated that the degree of quality characteristics is at the same level for both criteria, although the criterion of leadership with 2.86, has higher percentages of quality processes.

This is normal because leadership is a person-centered process, where the leader is the one who will determine the strategy, the policy of the school unit. The human resources present less indicators of quality characteristics (2.53) as it is shown in Table 6, and this is justified since quality processes are a matter of personal initiative of each colleague.

Table 6:
Average values in two criteria

		LEADERSHIP	HUMAN RESOURCES
N	Valid	21	18
	Missing	127	130
Mean		2,8636	2,5345
Std. Deviation		0,50564	0,83238
Minimum		1,81	1,15
Maximum		3,66	3,83

Regarding the inductive statistic, Chi-Square (χ^2) tests of independence were implemented for the investigation of the statistical significance and correlation between the examined variables. Essentially, we wanted to investigate whether the basic demographics that represent years of educational service and management knowledge by teachers, can influence the variables of quality criteria, specifically leadership and human resources.

The first independence test aimed to investigate the correlation between teachers with knowledge in educational management and their belief on whether school principal should be evaluated. The statistical significance index is 0.017 (Table 7) which is greater than 0.05, which is further defined as a relevance factor for the social sciences. So, our alternative H1 hypothesis is confirmed. Thus, it turns out that if human resources have knowledge in educational management, they can better understand and foresee that a leader with managerial skills and background can better determine the strategic planning of the school unit. Clearly since executives are responsible for the solid foundation of school planning, they will certainly do their work better if they are evaluated since they get feedback from their evaluation.

Table 7
Independence control: correlation of variables “management knowledge - evaluation of management

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	12,117	4	0,017
Likelihood Ratio	12,817	4	0,012
Linear-by-Linear Association	,638	1	0,425
N of Valid Cases	147		

”

The second independence test aimed to investigate the correlation between years of educational service and their participation in innovative actions. The correlation of the two variables is $0.058 > 0.05$ (Table 8). Therefore there is no correlation between years of educational service and their participation. So the hypothesis H0 is confirmed. From this specific independence test, it is found that the years of educational service do not affect teachers' willing to participate in innovative actions, but it is a purely personal choice.

Table 8
Independence control: correlation of variables “years of educational service and their participation in innovative actions”
Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	25,759	16	0,058
Likelihood Ratio	26,368	16	0,049
N of Valid Cases	148		

The third independence test aimed to investigate the correlation between knowledge management and the involvement of partners in the school planning. The correlation of the two variables is $0.438 > 0.05$ (Table 9). Therefore there is no correlation between Knowledge of management and the involvement of partners. So the hypothesis H0 is confirmed. From this specific independence test it is found that teachers' decision to participate in the planning of the school unit depends on his/her personal choice and his/her compliance with the educational organization's culture.

Table 9
Independence control: correlation of variables “knowledge management and the involvement of partners in the school planning

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	3,773	4	0,438
Likelihood Ratio	3,783	4	0,436
Linear-by-Linear Association	,105	1	0,745
N of Valid Cases	143		

The fourth independence test aimed to investigate the correlation between development of the strategy through the self-evaluation of Special Education School Units by the principal and the adoption of self-evaluation procedures by the teachers themselves. The correlation of the two variables is $0.000 > 0.05$ (Table 10). Therefore, there is significant correlation between the development of the strategy through the self- evaluation by the principal and the adoption of self-evaluation procedures by the teachers themselves. So the hypothesis H0 is confirmed. From this specific independence test, it turns out that if the leadership makes self-assessment and disseminates the results of the self-evaluation of his work, then teachers can be encouraged to become familiar with evaluation processes of both their own work and the work of the school unit.

Table 10
Independence control: correlation of variables “ The self-evaluation of Special Education School Units by the principal and the adoption of self-evaluation procedures by the teachers”

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	63,342 ^a	16	0,000
Likelihood Ratio	58,287	16	0,000
Linear-by-Linear Association	34,153	1	0,000
N of Valid Cases	148		

The fifth independence test aimed to investigate the correlation between adoption of quality standards and approaches to excellence by the director of SMEAE and the motivation of human resources to participate in innovative actions. The statistical significance index is 0.000 (Table 11) which is greater than 0.05 which is defined as a relevance factor for the social sciences. So our alternative H1 hypothesis is confirmed. Thus we realize that when human resources have knowledge in educational management they can better understand and foresee that a leader with managerial skills and background can better determine the strategic planning of the school unit. Clearly since executives and principals are responsible for the solid foundation of school planning, they will certainly do better their work if they are evaluated because they get feedback from their evaluation.

Table 11
Independence control: correlation of variables “adoption of quality standards and approaches to excellence by the director of SMEAE - motivation of human resources to participate in innovative actions”

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	56,018	16	0,000
Likelihood Ratio	58,762	16	0,000
Linear-by-Linear Association	40,915	1	0,000
N of Valid Cases	148		

This correlation shows that the human resources of Special Education School Units should be informed about the standards of quality and excellence. When we speak about excellence we refer to the effort of all teachers to achieve the maximum possible result through their pedagogical work, with the ultimate goal the social progress and justice. Therefore, if the director of a Special Education School Unit contributes to the teachers' understanding of excellence as an overall optimal performance that serves collective visions and goals, then he / she will be more receptive to participating in innovative actions that promote the progress of the school.

CONCLUSIONS

Leadership is perceived to be a fundamental indicator for quality processes and is a purely person-centered process. The leader can contribute to the formation of quality conditions within the school unit via planning and self-evaluation actions of his own administrative work and through the diffusion of quality and excellence standards. If he is aware of quality and excellence standards he can promote more collective visions.

In the field of human resources, the results of this study indicated that the years of educational service play an important role for teachers to make strategic decisions that may promote quality processes and the extroversion of the school unit. Teachers at Special Education School Units want to develop their skills for the provision of quality education which is one of the 17 main global goals of sustainable development of the United Nation Organization. The provision of quality education is also a priority for the national strategic reference framework and this is confirmed by the recruitment of teachers, who must be specialized in special education issues. In addition, their training in administration of educational organizations familiarize them with assessment procedures within the school unit.

Furthermore, it proved to be that the Special Education School Units focus on the development of students' cognitive and social skills. In addition to this, they appear to be willing to develop

collaborations with the Ministry of Education and the Institute for Educational Policy. However they have not totally developed the necessary maturity to integrate them more actively into the internal planning of the school unit.

As far as the procedures are concerned, Special Education School Units promote creativity and innovation at a fairly good level. They are interested in disseminating and adopt good practices especially in the context of compensatory education. In addition, from the processing of statistical data it emerged that teachers' self-evaluation of their own educational work is very important for them in order to participate in evaluation processes in the wider internal context of the school unit.

From the research conducted, it is perceived that the special education school units have adopted a good level of maturity in both promoting and applying quality procedures. It can be concluded that our self-evaluation must be a purely internal process which requires the whole school community and all involved teachers and administrators to participate, in order to promote policies of quality and self-improvement.

Regarding the implications for further research, the study can be broadened to include the directors' perceptions of the use of EFQM in Special Education School Units.

The sample size of this research may also be increased and grouped as school administrators and teachers. In addition to the survey method used in this research, interviews can be carried out with teachers, administrators and stakeholders and be analyzed further. Moreover, studies related to the Special Education School Units' culture and functioning can be conducted which will help teachers be integrated with the educational organization's vision. Finally, more emphasis could be put on the criteria for the results as they defined by the European Excellence Model EFQM, because the present research mainly focused on the conditions.

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EDUCATION POLICY AND PRACTICES

COMPARATIVE STUDY ON THE STRUCTURE OF EUROPEAN EVALUATION SYSTEMS IN EDUCATION

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ABSTRACT

The present study aims to highlight the differences between centralized and decentralized educational systems and also to capture comparatively the international convergence and divergence trends on educational policy and evaluation applied in twelve European countries with a heterogeneous educational, historical, social, economic and cultural background compared to Greece. A comparative content analysis is carried out in order to systematically approach the characteristics of European educational evaluation systems. The main survey findings reveal the existence of a mandatory and decentralized school evaluation procedure in most European countries in contrast to the centralized and bureaucratic system of Greece. Additionally, the Greek educational evaluation system is proved as the most ineffective and inconsistent in terms of structure and objectives of improvement of educational practices and achievement of national goals. Proposals for further research are suggested. Conclusions are drawn and proposals for further research are suggested.

Key Words: Educational evaluation, centralized-decentralized evaluation systems, Europe, Greece.

PURPOSE

Research justification

In the context of the challenges of the modern Knowledge Society for individual and social development, the issue of education and in particular of educational evaluation is critical in global educational policies. The rapid changes in economic, social and technological level have also affected the field of education, making imperative the request for upgrading the quality in education. In this perspective, national and supranational organizations have focused their research programs on the evaluation of educational institutions and educational work, since on the one hand it is directly linked to many problems of educational changes and reforms, both at European and international level, and on the other hand is a necessary valuation measure of the effectiveness's fluctuations of any institution or organization (OECD, 2017).

In addition, improving the quality and effectiveness of education across the European Union is one of the key objectives of the European Strategic Framework for Education and Training (EUR-LEX, 2021). High-quality education is critical to Europe's employment, social cohesion, and overall economic and social success. However, this quality must be constantly monitored and improved, which requires effective quality assurance systems that will cover all levels of education. Consequently, evaluation has a strong dynamic and is a complex process, as its effectiveness is based on a continuous collection of data, criticism and decision-making and the adoption of good practices (Dimitropoulos, 2002 ; Katsarou & Dedouli, 2008). In particular, educational evaluation aims to monitor or improve the quality of the school community. It can cover a wide range of school activities, including teaching and learning, and/or all aspects of school administration and teaching staff, and it is a widespread approach to quality assurance across Europe (Eurydice, 2015).

The subject of this research presents significant interest as the recent activation of educational evaluation in Greece, after an institutional uselessness of many years, comes into conflict with the strong reaction of a large part of the educational community. Despite the declared consultations of the Ministry of Education to form a new institutional framework evaluation with the systematic promotion of quality assurance measures, there has been widespread concern and insecurity among teachers. In this aspect, becomes very interesting to search what is happening in other European countries and

whether better practices could be proposed, which would be more easily accepted by the educational community (Zavlanos, 2003).

Research purpose and objectives

The above considerations in relation to the increasing interest regarding evaluation in Greece as an autonomous educational problem and the continuous unsuccessful attempts to regulate it were the starting point of the research reflection of this comparative study exploring the structure of twelve European educational evaluation systems. Hence, the main purpose of the present study is to identify and highlight the differences between centralized and decentralized educational systems. The study aims also to capture comparatively the international convergence and divergence trends on educational policy and evaluation applied in twelve European countries (Austria, Belgium, Cyprus, Denmark, Finland, France, Germany, Italy, Norway, Sweden, United Kingdom and Greece) with a different educational culture and a heterogeneous historical, social, economic and cultural background compared to Greece. The obtained data allow us to draw conclusions and formulate suggestions and good practices for an applicable model of educational evaluation, harmonized with the requirements of the Greek educational system and social environment, in order to upgrade teachers' evaluation procedure and their professional development.

Research questions

Based on the purpose and the above mentioned sub-objectives, the following research questions emerged, that were included in the questionnaire of field research:

- What are the main features of the evaluation systems applied in education by the surveyed European countries?
- Which is the administrative system (centralized - decentralized) of each country?
- Which body has the main responsibility for teacher evaluation?
- Which are the teachers' evaluation criteria?
- Which are the teachers' evaluation methods?
- How are the results of the educational evaluation utilized?
- Which are the consequences of positive or negative evaluation and how can they affect their teachers' professional identity?
- To what extent is the evaluation of the teacher in line with the quality assurance of the Greek educational system in relation to the other under investigation countries?
- Which are the prevailing trends in teacher evaluation?
- With which European country does the Greek educational evaluation system seem to have more in common?

Fields of Educational Evaluation

The subjects of educational evaluation, based on the international classification of the International Organization for Economic Development & Cooperation, are divided into two main categories (OECD, 2009):

Subjects related to functional evaluation issues, as:

- Quality of the pedagogical and scientific practice.
- Conditions of internal organization (communication, environment of action, etc.).
- Administrative and financial management.
- Relations with local and regional partners.
- Individual functions of an educational institution (development of skills for the effective management of teaching resources, personnel environment and general management, development of external relations).

Subjects related to non-functional evaluation issues, as:

- Incoming quantitative and qualitative data of the educational system (socio-economic and institutional, material and technical infrastructure of educational units, resources of pedagogical documentation, staff environment, school population).
- Working methods and environment of action, administrative work, general and financial administration, pedagogical functions.
- Outgoing data (quality of the services produced, communication with partners, staff).

In summary, it is easy to understand that the subject of educational evaluation is very broad. This means that it includes both animate and inanimate potential, curricula and all kinds of educational frameworks, laws, building infrastructure and supervisory material of educational units. Consequently, the evaluation focuses on all those elements that should be orchestrated harmoniously, in the context of a continuous dialectical relationship with social and economic issues, in order the educational system to function properly and effectively (Pedagogical Institute, 2008). However, it should be noted that the items that each country puts at the heart of its evaluation process seem to vary within the evaluation frameworks created by each EU country. More specifically, in some countries the emphasis is on teachers' individual evaluation (Sweden or France), in one of them the goal is the evaluation of the school unit (Italy) and in others the emphasis is on educational evaluation through local authorities (Scandinavian countries) (Eurydice, 2004).

Educational Evaluation Models

The evaluation models of the educational work based on the social-economic environment and educational processes are categorized into:

- Functional models, which focus on teacher's effectiveness, decision-making and educational policy measures without analyzing any malfunctions
- Democratic models, which place more emphasis on learning process and teacher's self-action.

According to the criterion of the way of administration of the educational system, they are distinguished in:

- Collective models, where the operation of all educational processes is ensured by the central government
- Decentralized models, where the dominant role is played by regional government bodies, which exercise their responsibilities without prior approval of the central government (Baliou, 2011 ; Taylor, 2007).

RESEARCH METHODS

Research sample

The countries of the present survey were selected with the prospect of forming a representative sample that will have a variety of characteristics and will be distributed in northern countries (Scandinavian countries), in countries with a traditionally centralized educational system (Greece, France and Italy) as well as in countries with a decentralized educational system (Austria, Belgium, Germany, United Kingdom, Scandinavian countries), while Cyprus was included due to the common historical origins with Greece.

Research method

In the methodological framework of the present study, a comparative content analysis based on an extensive literature review is carried out in order to systematically approach the thematic units of analysis regarding the characteristics of educational evaluation systems. Another important aspect is the identification of the following categories of analysis: educational management, quality assurance, evaluation methods, evaluation bodies, evaluation frequency and criteria, individual evaluation process as well as the utilization of educational evaluation results (Kassotakis, 2003 ; Harisis, 2007).

Exploring the issue through an international comparative study is imperative, as teacher evaluation can only be understood from the perspective of globalization that has led to a policy of convergence and harmonization. In general, the supranational organizations establish under their supervision training networks in which the cooperation of the Member States is intensified (Tsaousis, 2007 ; Zmas, 2007). Moreover, the comparative method is both a descriptive and static research technique and also interpretive and dynamic. Its descriptive and static character is located in the collection, control and recording of relevant information, while its interpretive and dynamic character is inferred from the analysis and interpretation of changes in the issue under consideration (Janssens & van Amelsvoort, 2008 ; Robson, 2010).

Additionally, the method of content analysis was applied aiming at the "objective, systematic and quantitative description of the obvious content of written or oral communication", with the ultimate goal of interpretation (Tzani, 2005). In the present study, the method of content analysis will be used in order to systematically approach the thematic units regarding the characteristics of evaluation systems

in education and to identify the categories of analysis. These categories will be the basis of analysis, approach, examination and comparison of rating systems (Athanasiou, 2007 ; Cohen, Manion & Morrison, 2007).

RESULTS AND DISCUSSION

The contemporary view and presentation of the evaluation systems in the education of the twelve representative European countries was based on the selected categories of analysis. The aim is to highlight important aspects of the investigated issues and data determining the identity of the whole process and at the same time the appropriate organization of content, in order to answer the research questions and to draw conclusions about their educational policy.

Specifically, the categories of analysis formulated for each country are the following:

- Management Form of Educational System
- Methods of Educational Evaluation for Quality Assurance
- Evaluation Frequency
- Educational Evaluation Bodies
- Educational Evaluation Process and Tools
- Educational Evaluation Criteria
- Utilization of Evaluation Results

The main findings of the multifaceted comparative evaluation of the twelve European educational systems are presented in the following tables and paragraphs:

Table 1
Management Form of Educational System

		Twelve European Countries											
		Greece	Cyprus	Austria	Belgium	France	Germany	United Kingdom	Italy	Denmark	Norway	Sweden	Finland
Management system	complete centralized	v											
	less centralized		v			v			v				
	decentralized			v	v		v	v					
	complete decentralized									v	v	v	v

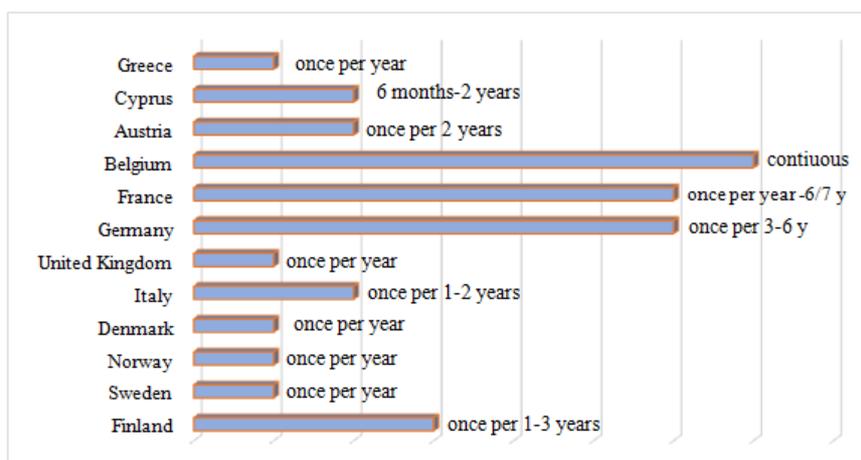
According to the data presented in Table 1, the way of administration of the education system of the 12 European countries ranges between complete centralized (Greece is a classic example) to less centralized systems (Cyprus, France, Italy), and decentralized (Austria, Belgium, Germany, United Kingdom) to highly decentralized systems (a typical example is the four Nordic countries).

Table 2
Methods of Educational Evaluation for Quality Assurance

	Twelve European Countries											
	Greece	Cyprus	Austria	Belgium	France	Germany	United Kingdom	Italy	Denmark	Norway	Sweden	Finland
Evaluation of educational system	v	v	v	v	v	v	v	v	v	v	v	v
Teacher evaluation	v	v	v	v	v	v	v	v	v	v	v	v
School evaluation	v	v	v	v	v	v	v	v	v	v	v	v
Self-assessment	v	v	v	v	v	v	v	v	v	v	v	v
International student performance competitions	v	v	v	v	v	v	v	v	v	v	v	v
Mechanisms for collecting and analyzing information, publishing performance tables, setting national thresholds							v					
Conventional education indicators via statistics on educational system			v	v	v	v	v	v	v	v	v	v
Unpublished school performance scale										v	v	v

Quality assurance practices that are evaluative procedures usually concern the evaluation of schools, teachers, student performance at national and supranational level, the education system generously and the pursued educational policy. Based on the data of the comparative study, the examined European countries focus on the points summarized in Table 2. According to them, the methods applied by 12 countries to ensure the quality of their education are basically common, regardless of the administration of their educational system. In particular, the evaluation procedures concerning the evaluation of the educational system, the teachers, the school, the self-evaluation and the participation in international student competitions are adopted by all the countries of the sample. Moreover, all countries (except Greece and Cyprus) utilize the education indicators by collecting statistics on the education system. Three of the Nordic countries (Norway, Sweden, Finland) use unpublished school performance scales in contrast to United Kingdom.

Figure 1
Evaluation Frequency



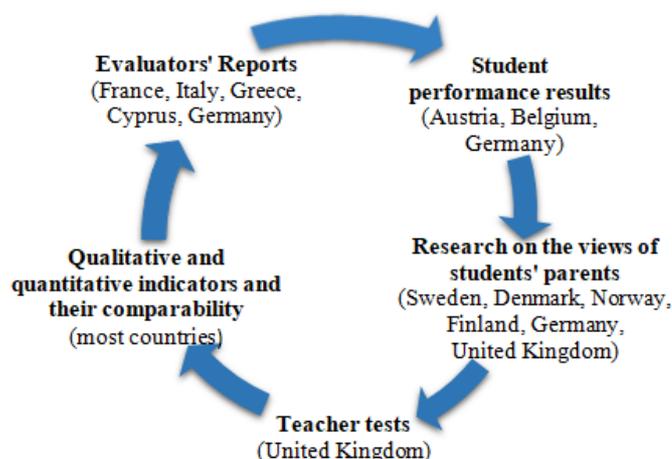
In an effort to comparatively capture the frequency of the implementation of teacher evaluation, the data in Figure 1 show that it is varied among the 12 participating countries in the survey. Either evaluation is often annual (Greece, United Kingdom, Denmark, Norway, Sweden), or can be implemented every 6 months to 2 years (Cyprus), or less frequently (France, Germany). Belgium seems to be the only country that has adopted the ongoing evaluation.

Table 3
Educational Evaluation Bodies

		Twelve European Countries											
		Greece	Cyprus	Austria	Belgium	France	Germany	United Kingdom	Italy	Denmark	Norway	Sweden	Finland
Evaluation bodies	Ministry of Education	v	v										
	Regional Local Authorities						v		v				
	Ministry of Education and Regional Local Authorities				v	v				v	v	v	v
	Independent Authorities			v				v					

A focused approach to the individual or teachers' evaluator bodies is given in Table 3, by which the aggregated data of the analysis in the sample countries show a variety. In particular, in Greece and Cyprus, the evaluators emanate from senior and specially formulated bodies of the Ministry of Education. In the case of Germany and Italy, schools and teachers are supervised by regional and local authorities. Half of the sample countries adopt two parallel bodies of evaluators. Finally, in the case of Austria and the United Kingdom the responsibility for educational evaluation lies on the independent authorities.

Figure 2
Educational Evaluation Process and Tools



The comparative study showed that the most common educational evaluation practices adopted by the 12 countries bring into focus the evaluation after completing a trial period. This is the stage of individual evaluation of newly appointed teachers and is applied in all 12 countries. It also aims to evaluation as performance management in the context of teacher certification (Austria, Belgium, Italy, United Kingdom) but also of a regular in-school evaluation with a predefined framework (Greece, Cyprus, United Kingdom, France, Germany, Austria, Belgium) or autonomously by School Principals (Italy, Denmark, Sweden, Norway, Finland). Furthermore, it aims to evaluation with rewards for teachers with excellent performance and is mainly adopted by United Kingdom. According to Figure 2, despite the common tools for conducting educational evaluation, the 12 European countries use additionally the evaluators' reports (France, Italy, Greece, Cyprus, Germany), student performance results (Austria, Belgium, Germany), the exploration of the views of students and parents (mainly in Nordic countries) and teacher tests (United Kingdom). Finally, the most countries use qualitative and quantitative indicators to monitor their development.

Table 4
Educational Evaluation Criteria

		Twelve European Countries											
		Greece	Cyprus	Austria	Belgium	France	Germany	United Kingdom	Italy	Denmark	Norway	Sweden	Finland
Pedagogical/ didactic work	Didactic skills	v	v	v	v	v	v	v	v	v	v	v	v
	Pedagogical skills and classroom management ability	v	v	v	v	v	v	v	v	v	v	v	v
Consistency and ability	Consequence official duties performance	v	v	v	v	v	v	v	v	v	v	v	v
	Active participation in the operation of the school	v	v	v	v	v	v	v	v	v	v	v	v
	Collaboration and communication with colleagues, parents, out-school bodies	v	v	v	v	v	v	v	v	v	v	v	v
Further training		v	v	v	v	v	v	v	v	v	v	v	v

The evaluation of teachers in all the countries of the sample is based on criteria, which are at the national and universal level valid and do not differ between countries with a centralized or decentralized system. According to the findings of Table 4, in all countries, the first evaluated field is teachers' pedagogical and didactic work that concerns both the scientific training, the pedagogical skills and ability of classroom management (teaching planning, teaching methodology, scientific training, pedagogical climate, classroom management and teacher self-assessment). The second evaluated field is the service consistency and adequacy in terms of performing teachers' official duties, active participation in school operations as well as the cooperation with colleagues and extracurricular organizations. Moreover, several countries in the criteria of individual evaluation include the professional and further training activities.

Table 5
Utilization of Evaluation Results

		Twelve European Countries											
		Greece	Cyprus	Austria	Belgium	France	Germany	United Kingdom	Italy	Denmark	Norway	Sweden	Finland
Types of utilization results	Formative	v	v	v	v	v				v	v	v	v
	Cumulative						v	v	v				

According to the last category of analysis regarding the utilization of the results of educational evaluation, the research results presented in Table 5 show that most countries adopt the formative use of the results, which is applied during the educational work. The weaknesses are recorded and the areas of improvement are identified for each teacher accompanied by corrective educational interventions and individual development plans incorporated into the overall school development plan. In this way, the results of the evaluation are linked to the provision of professional development opportunities. Fewer countries resort to the cumulative use of results, which is carried out after the completion of the educational work, focuses on the performance of teachers, determines the development of their careers and sometimes leads to the rewarding of distinguished teachers or to the imposition of sanctions. The results of the evaluation, although not directly related to teachers' salaries, determine their professional development and may have an impact on their salary scale. In particular, in United Kingdom, it affects teachers' grade development, promotion and principals' salary.

IMPLICATIONS

Conclusions

The present study sought to answer a number of research questions related to the main aims of the survey, as follows: Initially, the educational evaluation systems applied in Greece and eleven other representative countries were highlighted through a comparative analysis, in order to emerge the key strategies adopted by them as well as their convergence and divergence points. The obtained data allow us to draw estimates and conclusions and promote the exchange of knowledge on approaches to improving the quality of European educational systems. The country-wide review and comparison of educational evaluation across Europe confirmed that improving the quality of education is a key concern of the policy dialogue on education, both at national and EU level. The need for policies and mechanisms to ensure and improve the quality of education has been widely recognized at the European level.

Almost all the participating countries in the comparative study have an institutionalized framework for educational evaluation, with the aim of better controlling their education system and striving to meet the goals of the Lisbon Strategy. However, in some countries, there is no national framework for teacher evaluation and local education authorities and schools are responsible (French-speaking Belgium, Austria, Sweden, Denmark, Norway, Finland). Finland's approach is special, as there is no evaluation of the school system but only of the individual school units by Municipalities through the collection of students' data performance.

The 12 European countries of the survey put also forward a wide variety of evaluation models and many are in an experimental or review phase, making conclusions about the efficiency and evaluation standards of education systems uncertain. However, it seems that beyond the classic concept of control for compliance with specifications and requirements there is a common tendency in these countries for the evaluation to aim at the advisory assistance and support of the schools as well as the "qualitative" parameter of the evaluation through the evaluation of the schools. This type of evaluation allows on the one hand to evaluate at the same time the key factors-roles of the system (principals, teaching staff, students), the pedagogical side and the available infrastructure and on the other hand to have greater transparency, more substantial involvement of all actors in the educational process (parents, local authorities, wider social groups, etc.) and expanding the scope and tools of the evaluation.

At the same time, in many countries (Finland, Sweden, Norway, Denmark, United Kingdom, Italy) the concept of self-evaluation is promoted, which contributes to the autonomy of schools and the assumption of more responsibilities through the design of a school program that sets specific goals and monitor their fulfillment.

Finally, in most countries of the sample, the development and accountability of the evaluation is combined in a single evaluation process. This combination involves contradictions. Especially in Greece, teacher evaluation is one of the most controversial issues and faces difficulties and challenges in its implementation mainly due to the lack of evaluation culture.

General implications for practice

The first important practical contribution of the present research is that the comparative data regarding the developments in the European models of educational evaluation have positive effects on the overall evaluation of the educational system. This happens because the wide dissemination of opinions and the collection of many documentary data enhance the reliability of the evaluation process and offers a more realistic and realistic picture of the education and training provided. On the other hand, the access to and understanding of supranational educational evaluation systems has a positive effect on each member of the educational system, as it helps to better orient and monitor their personal development (professional for teachers and the rest of the staff, educational for students).

However, the findings indicate that the development of an effective evaluation model for the whole education system presupposes the participation of many factors, such as the essential technical and financial support and the implementation of self-evaluation procedures, as well as the strengthening of the infrastructure and the available tools and resources. The better the training in evaluation and quality management is, the better cooperation among the stakeholders is achieved. It is necessary, at the individual level of teachers and students, to change the relevant culture and to enhance self-criticism and active participation in monitoring improvement.

Implications for Greece

Regarding the case of Greece, the strengthening of the exchange of experiences and the diffusion of good practices give the opportunity to take advantage of the promising experience of other European countries and to adapt it to the Greek mentality and the organization of its educational system. However, the aforementioned benefits from the implementation of the evaluation in the Greek educational system can arise under certain conditions, such as:

- Promotion of the school unit as a key body for planning and evaluating teachers' work.
- Creating a culture of evaluation in schools.
- Enhancing cooperation, participation, self-knowledge and professional development of teachers.
- Forming a culture, taking initiatives for planning actions and solving problems in order to improve the quality of the educational work.
- Better administration and operation of school units as well as efficient utilization of human resources.
- Upgrading teaching and pedagogical practices, promoting innovation and developing educational, supportive and compensatory practices.

However, regardless of national and supranational objectives, the predominant selective message of this research is that education quality assurance systems should be based on principles that are not limited to a list of criteria. A spirit of continuous effort must be cultivated in order to improve the quality of education. The European Member States are required to develop and promote such a culture in order to ensure the transparency of the results of quality evaluation.

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EXPERIENTIAL TEACHING METHOD – STAIRS

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ABSTRACT

The experiential teaching method is an active teaching method, in which the learners experience the subject under investigation as they explore it through their experiences (ASPAITE, 2016) and these experiences lead to the learning process. The purpose of the experiential method is the development of communication skills of students through interactive activities, which at the same time give impetus to the emergence of individual skills and characteristics. This teaching proposal is an example of an experiential teaching method with the parallel utilization of new technologies (ICT) and web 2.0 tools. It is addressed to students of the 3rd grade of Professional High School (EPAL) in the subject of construction and more specifically, in the didactic unit of the composition of stairs. The main purpose of this experiential teaching process is through a state of reflection for the students to be activated to explore the construction criteria of the stairs and their composition elements by actively participating in the activities and always aiming at cognition.

Key Words: experiential teaching method, scales, digital tools.

INTRODUCTION

Experiential learning

Experiential learning as a teaching method begins with the experiences of each learner. This personal experience it supports its basic guiding teaching line as an alternative way of learning, which brings the student in direct contact with the subject to be explored, trying to connect the teaching practice that is implemented in the classroom with the social conditions and the daily experience of the participants (Evans, 1994).

In other words, experiential teaching is based on the use of personal experiences that cause new knowledge and experiences, emphasizing the active role that the trainee has in the educational process (Bosniadou, 2002). With the application of this method, mainly social and communication skills are developed between the participants in the educational process and their personal development is promoted (ASPAITE, 2016).

This model aims at the search for meaning, gives impetus to the cognitive and emotional field of students and by cultivating their personal experiences increases their skills. The first pedagogical researcher to mention experiential learning was Dewey, who stated that it is "an experience for the experience and through experience" learning takes place (Dewey, 1980). After Dewey the baton was taken by Piaget (1952), who argued that learning is nothing more than a process of interaction of each child with his environment and continued with Lewin, who in turn stressed the great importance of individual experience in learning linking theory with practice. The three aforementioned scholars and great educators based their work on experiential learning focusing on personal experience, the role of which did not exist until then in any scientific report (Kolb, 1984).

D. Kolb (1984), relatively recently was the one who laid the scientific foundations of experiential education as he argued that effective learning should include full and open involvement of the learner in new experiences, reflection and observation from different perspectives through lived experiences. In fact, experienced learning is directly related to the socio-cultural approach as it argues that experience is directly related to the cultural context that surrounds the individual and his interaction with it. In this way, a collaborative learning process emerges in which the learners exchange knowledge and experiences until they are led to the final cognitive result.

Based on Dewey's work, Kolb developed his own model of experiential learning according to which knowledge is constructed through the transformation of personal experience and mentions four stages, which take place during the learning process: a) the specific experience from which it all starts, b) reflexive observation, c) abstract conception and d) active experimentation. Students, according to the

Kolb model, are actively involved in learning, leaving the role of observer, as was the case in the traditional teaching model, and through practice are activated, achieving cognitive results that are immediately visible. In other words, they focus on a specific experience, followed by critical reflection on it and elaboration of possible scenarios, which are able to differentiate personal experience (Kolb, 1984).

In other words, the knowledge in this teaching method leaves behind the traditional memorization and is based on direct observation, contemplation and action. In a learning environment rich in stimuli and sources of knowledge, the role of the teacher is differentiated, which ceases to be the exclusive source of knowledge but is the bridge to the activation of experiential learning and the formation of a participatory climate of study and activation of the public interest in discovery and action.

Description of the experiential learning cycle

After analyzing and studying the learning models of previous educators (Piaget, Lewin and Dewey), Kolb created his own model for experiential learning, which was an important guide for the use of this type of learning. For a thorough study of the theories of the aforementioned authors, Kolb states the following (Kolb, 1984):

A) Regarding Lewin, he argues that his study clearly shows the position that learning is achieved through change and to achieve this change it is necessary to properly utilize the experience of each individual. Through careful observation of the experience follow the necessary reflections, the creation of abstract concepts that lead to generalizations and these to conclusions. The now-finalized conclusions lead the individual to new experiences that activate a new cycle of experiential learning by triggering a process of continuous learning feedback (Noye&Piveteau, 1999).

B) For Dewey, he argues that his theory states that in order for learning to occur, students' feelings, desires, and motivations first need to change, and that all this transformation is achieved through the analysis of a specific lived past experience. The whole process of transforming the living experience goes with the following course: first the student takes into account the observation of the environment, then the emergence of known similar situations that have taken place in the past and finally, the cognitive critique follows in order to the final conclusion is drawn (Noye&Piveteau, 1999).

C) Piaget's theory states that in a cyclical interaction between the environment and the experiences of a person who lives and is activated in it, learning takes place. His theory bears similarities with Dewey's theory as he argues that a key element for knowledge to occur is the interaction in adapting ideas to the experiences of reality and the assimilation of experiences to pre-existing ideas. These experiences and views are the main factors that activate the development of thinking and therefore learning (Noye&Piveteau, 1999).

Taking the above theories as a basis, Kolb (1984) developed his own model, his own experiential learning cycle, which includes the following stages:

- the specific experience
- reflexive observation
- abstract thinking
- active experimentation

Kolb's circle refers to the understanding that is the first step of knowledge, the acceptance and transformation of experience into some form of knowledge and the active involvement of children in the learning process, with the ultimate goal of direct cognitive results from the practical process. More specifically, the learning process according to Kolb begins with the emergence of the lived experience, proceeds to the reflection on it and the first drawing of conclusions, then some theoretical principles are formulated and the first generalizations are made and finally, all the results that have occurred so far are being gathered and an attempt is made to put them into practice (Kolb, 1984).

Teaching planning using the experiential method

In trying to design the experiential teaching method there are some factors that need to be considered and which are the following:

1. the Interdisciplinary Unified Curriculum Framework (DEPPS) as well as the Detailed Curricula (APS)
2. the basic principles of experiential learning

3. the phases of Kolb's learning cycle
4. the main categories of educational techniques used in the educational process
5. the way of choosing the topics of experiential activities
6. the role that the teacher plays in the whole experiential learning

The DEPPS and the A.P.S. in an effort to avoid sterile knowledge tried to integrate new data through the participatory effort and the lived experience of the participants in the learning process based on the main principles of experiential learning, which is the facet of utilizing the experiences of learners encouraging active participation and investment in the subject matter, encouraging action, experimenting and discovering situations that make sense to them and motivates them mentally and emotionally and promotes their self-awareness (Postle, 1993).

The teaching experienced today, follows six sub-phases with the first being the recall of experience on the part of the learner. The second refers to the reflection on personal experiences and their connection with the object to be studied, the third is related to the classification of the individual elements of the teaching object with the experiences of the learners. In the fourth the new data are tested in new situations and generalized. The fifth phase concerns the evaluation and the personal reflection of each trainee and the last one, includes the recapitulation of the deeds connected with a metacognitive effort (Matsagouras, 2012).

Throughout this effort, teaching techniques are used that are directly related to the practice and are implemented both inside and outside the classroom. The techniques used in the classroom are case studies, brainstorming, simulations, role-playing games and in general group work and the processes that can take place within them.

Teaching techniques that take place outside the classroom take the form of active activities that involve students in experiential action and in experiencing intense emotional situations. Individuals in their effort to solve complex problems strengthen the team spirit as they interact and co-decide.

There is also the case of educational exercises, which are activities designed by the teacher himself wishing to give impetus to the learning process and are directly related to educational games. They are divided into three main categories: a) role-playing games, b) simulation games and c) computer simulation games utilizing digital applications and tools.

The role of the teacher in this whole learning process is definitely very important because he / she needs to have a number of skills, such as:

1. to have organizational skills and experience from participating in educational techniques or to accept help at the beginning, from a more experienced teacher (role of mentor)
2. to play the role of an animator and to strengthen the critical thinking of students
3. be an assistant in searching and finding information
4. to work harmoniously with students to deal with problems and make decisions
5. to have empathy o to perceive the sudden changes that occur in the classroom and is able to adapt to them
6. to participate with his / her students in educational games
7. to experiment with them and reflect on new ideas and practices o to make appropriate use of the climate that is formed in the classroom for the benefit of students
8. be based on the pre-existing knowledge of the students
9. to encourage group participation and cooperation between members
10. to be able to choose the appropriate technique for each occasion to be effective in each learning process
11. to take care of cognition activities (Matsagouras, 2012).

Didactic proposal entitled: "Composition of stairs"

The specific didactic proposal concerns the didactic unit of the stairs for the third class of Professional High School and has as its main goal through the emergence of the personal experience of the students to pass to the observation of new data, to the abstract conception and finally to the experimentation that will lead to new cognitive patterns and to the consolidation of the new knowledge. Sub-objectives are the trainees completing the course to be able to:

1. clearly define the meaning of scale

2. to classify the types of scales according to their destination and form
3. to distinguish scales depending on their construction material
4. clearly identify their requirements and the importance of their construction

Consequently, this didactic proposal seeks the development of all three levels of skills (cognitive, social and metacognitive) thus equipping students with all the necessary supplies that will allow them to create, manage, reconstruct and evaluate knowledge and at the same time act collectively (ASPAITE, 2016).

Thus, at the level of knowledge, students through the observation of audiovisual material, text in comic form, dialogue and group work have the ability to clearly define the meaning of the stairs and to classify the items according to the destination of manufacture and their form. In addition, through the synthesis of views and hypothetical scenarios they manage to identify the requirements for the construction of stairs and recognize their importance.

In the field of communication skills, students during the teaching process are encouraged to participate in group work and collaborate. Through the solution of hypothetical scenarios, they are encouraged to express their opinion about the subject matter by developing arguments, to communicate, to manage their disagreements by showing respect to the different point of view and to adapt to the participatory - collaborative process.

Regarding metacognitive skills, learners through the emergence of lived experiences, teamwork and interaction become familiar with the knowledge required to be equipped with the relevant subject. Through the teaching process they acquire critical thinking and mood for the development of their learning on the subject of stair construction. With the evaluation sheet, the digital form of evaluation is self-evaluated and hetero-evaluated, they connect the new knowledge with previous cognitive experiences, they review their cognitive course and they are led to metacognitive results.

This experiential teaching plan is structured in six main phases (emergence of experience, contemplative observation, abstract integration, experimentation, evaluation and recapitulation) with parallel utilization of new technologies with digital applications in each of them, in order to achieve the above-mentioned cultivation of digital literacy in the classroom as it is a necessary element for the emergence of the skills that the citizen of the 21st century must have. In other words, they need to have critical thinking in order to verify the information that exists in abundance in our time, to cultivate their creativity as it is the one that allows people to embrace their inner strengths and to express them in the most creative way, to be able to work together because this ability helps people understand how they can deal with a problem and communicate as in the age of written communication (e-mails, social media etc.) it is important for young people to learn to convey their thoughts in a way that those around them can understand and interpret correctly.

MAIN PART

Phase 1: Specific experience

During this phase of emergence and reflection on personal experiences, students are given through visual material - snapshots from the movie "Joker" - a condition of reflection in order to recall previous experiences related to the subject, which is also the initial attempt to emerge from the personal specific experience. Then, with the method of brainstorming, the students are asked to express their views on the topic which are recorded in the class board. Alternatively, the "AnswerGarden" digital application can be used, where the views of all participants are recorded. Then, the views are grouped by common axis and in this way a concept map is created with a central meaning of the word "Stairs", through the digital application "XMind", which is the basis for recording the initial views of the trainees.

Phase 2: Stochastic observation - reflection

In this phase, students are encouraged to study interactive digital text in the form of a comic, which is realized with the digital application "ActivePresenter" with similar material, which gives further impetus for thinking. Then, the students are divided into random groups using the digital application "Wheel of names", which gives a playful character to the whole process. The roles that the team members will take on are determined from the beginning (representative, secretary, members). The groups reflect on their personal experiences, which are recorded and grouped by the group secretary in order to be submitted to the class plenary by the representative of each group.

Phase 3: Abstract consolidation / classification

Through its representatives, each group presents the results of the personal views of the members in the plenary of the class, which are recorded by the teacher in the observation diary. The teacher then enriches the students' reflective thinking through open-ended questions, such as:

- why do we use the stairs?
- in your daily life what kind of stairs have you encountered depending on their construction material?
- When you come across stairs outdoors, have you noticed why they are used?
- Do the stairs you have encountered so far only have a straight layout?
- Can people with mobility difficulties use any type of ladder?

The answers of the groups are recorded again by the teacher in the observation diary, they are grouped and classified according to their similarities but also the use of similar thematic axes (construction material, use, type, etc.) and a presentation is being made with all the data, which is enriched with the help of the teacher so that it includes all the elements to be explored. The presentation is presented in the plenary of the class in parts and is redefined based on research data.

Phase 4: Experimentation / verification / generalization

In the fourth phase of active experimentation, each group is assigned the same hypothetical scenario for the application of new knowledge in real situations of reflection with the aim of intentional action that has not only a plan but also a method of predicting possible consequences (ASPAITE, 2016) and integration of new knowledge in personal experiences. To achieve this goal, students are given an application form with the following assumption: "You want to build the internal staircase of a hospital. What material will you use for its construction and what format will you choose?" Students in groups work together, classify the cognitive patterns so far and capture their answers.

Phase 4: Evaluation

This phase includes the evaluation of the entire teaching process and the activities used. The degree of achievement of the objectives that had been set from the beginning is checked through a different evaluation sheet for each group (matching sheet for the first group and crossword puzzle for the second) as well as individual self-evaluation with closed-ended digital questions through the "Kahoot" application. It should be emphasized, of course, that the evaluation takes place throughout the teaching, starting with the diagnostic evaluation, since on the occasion of the audiovisual material, the prior knowledge of the students is detected, it continues with the formative and group work through which is a hetero-evaluation between the groups and it ends with the final self-evaluation effort of the students.

Phase 5: Summary

The last phase of the teaching process includes the verbal summary by the students, which is carried out with the method of brainstorming and the creation of a new concept map with the application "Xmind". The latter concept map is a criterion for comparison with the first of the same participants in the educational practice who note the comparative results of their learning process and the enrichment of their knowledge which is clearly reflected in the two mental maps.

The results of the whole effort are discussed in the plenary of the class where conditions of hetero-evaluation are created but also cultivation of metacognitive skills that help the students to be aware of the way in which the subject was processed and the belief that they are capable of they develop action plans by interacting with those around them, to solve situations of reflection but also to expand their knowledge in real conditions of daily life.

CONCLUSIONS

From the present didactic proposal with the use of the experiential teaching method it results that the educational process that starts from the students by giving them triggers of revival of their previous experiences and the emergence of their personal interest in learning creates conditions of communicative learning and action. The participants themselves become co-responsible for the teaching and heuristic path to knowledge because the latter takes place through their interaction with the learning object, which is more successful since the experiences are directly related to the teaching content (Maniatis, 2005). In this situation, the teacher is not the one who regulates and determines the

teaching path, but becomes the facilitator and the one who provides the research triggers and creates the appropriate stimulus-rich, educational environment.

In addition, it structures the learning object with multiple key skills for each of which it designs specific activities that make sense to the students and are taken from everyday reality. The goals formulated at the beginning of the teaching proposal are specific and measurable so that it is possible to reflect their achievement or not. At the same time, an effort is made through the didactic object that is very specific to realize the general purpose that is always timeless and mainly reflects the cultivation of critical thinking, the development of individual initiative as a result of personal choices in an interactive environment that provides immediate and steady feedback and enables with the selected activities it provides, the trainees can make connections and extensions in all the cognitive areas with the ultimate goal of the holistic approach of learning and metacognition.

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THE IMPORTANCE OF DISASTER SAFETY EDUCATION IN ADULTS. A SYSTEMATIC REVIEW

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ABSTRACT

Disaster safety education should be designed for everyone and thus should be included in the relevant educational objectives in either the formal or non-formal education processes. The aim of this systematic review was to determine the significance of disaster safety education in adults and to present, in accordance with the articles of the systematic review, the lifelong educative programs. A thorough evaluation of the literature was conducted as well as a systematic review under the keyword framework. A PICO analysis was conducted, in order to evaluate the research area, specifically the

description of the population, the identification of the intervention, the alternative or traditional educational procedures, and the results according to the manner of completion, improvement or influence. The systematic review was carried out through the bibliographic databases Pubmed, Science Direct, Web of Science using the logical AND and OR operators that allowed the search criteria to be combined in a clearly defined way. A total of 558 publications and papers were retrieved and narrowed down to 13, in accordance with the Prisma Flow Chart criteria. Disaster safety education is being researched within a multidisciplinary approach and an emphasis on disaster mitigation. The primary research methodologies were qualitative, particularly case studies that included narration and risk scenario creation. All the 13 publications indicate the importance and necessity of disaster safety education.

Key Words: Disaster, Education, Adulthood, Safety, Information.

INTRODUCTION AND PURPOSE

According to the Aristotelian viewpoint, education may be viewed as an "ornament in prosperity and a refuge in adversity", referring to the challenging decades before the necessity of education and specialization in dealing with natural and man-made crises (Hitz, 2013). Despite the fact that the issue is vital to humanity's existence as a whole, most educational strategies do not address it in order to be meaningful, avoiding the conventional combination of information, scientific areas, and educational courses (Chou et al., 2015). Multidisciplinary knowledge versus specialized knowledge could become a crucial consideration in specific fields and leadership roles. The preponderance of the implications in terms of mortality, morbidity, financial, and logistical effects are at stake once it concerns to crisis and disaster strategic planning (Chou & Wu, 2014).

Disasters, according to Shaluf (2007), are categorised as natural, man-made, or hybrid, which encompasses all forms of catastrophic incidents (Mohamed Shaluf, 2007). Many communities have established mechanisms to deal with the crises caused by natural disasters. In addition, researchers and policymakers have long recognized the value of education in promoting and mitigating catastrophe risk. Education can also be used to develop knowledge, skills, and attitudes about disaster prevention and adaptability, as well as to enhance the skills required to prevent disasters, prepare for and deal with the risks that accompany them, and support students and communities in reaching equilibrium life after a disaster. There is substantial evidence that students of all ages can be educated and actively collaborate with instructors at their school and individuals in the community to prepare for emergencies (UNICEF, 2009).

According to Khan (2008), awareness and education are requirements for preparedness, and disaster preparedness education should be offered by both authorities and non-governmental organizations (NGOs) (Khan, 2008). Formal curricular integration, as per Petal and Izadkha (2008), may be adopted very quickly in the form of optional courses or modules that integrate into current courses. Disaster risk reduction can also be comprehensively and gradually incorporated into the curriculum by clarifying its full outline, conducting an audit of existing curriculum in typical education, and formulating entry points during the curriculum adoption cycle for all participants and age levels (Petal & Izadkha, 2008).

It is well acknowledged and demonstrated that effective education may perform an essential role in protecting the society at wide from secondary hazards and vulnerabilities that occur during natural disasters. The cornerstones of initiatives designed to decrease these vulnerabilities are education, public awareness, and suitable training for the development of society's capabilities. As a consequence, it may surely promote individual, societal, and national rehabilitation and reconstruction agendas. UNICEF, for instance, is promoting vital work in the field of disaster risk reduction education, and in this context, it encourages efforts throughout the world with three widely acknowledged goals in terms of DRR education and school safety (Global Education Cluster (GEC), 2012).

The major goals of disaster preparedness, as according to Twig (2004), are to prevent possible imminent disaster risks and to develop more effective, resources, and systems in order to guarantee that those who are impacted acquire enough support (Twigg, 2004). Many scholars, including McEntire (2005), concurred that the goal of mitigation and preparedness is to lessen vulnerability to disasters via risk assessments, enhanced engineering, rational land use management, emergency practical exercises, public education, and other practices (McEntire, 2005).

Disaster safety education should be designed for everyone and thus should be included in the relevant educational objectives in either the formal or non-formal education processes. The aim of this systematic review was to determine the significance of disaster safety education in adults and to present, in accordance with the articles of the systematic review, the lifelong educative programs.

RESEARCH METHODS

A thorough evaluation of the literature was conducted as well as a systematic review under the keyword framework. A PICO analysis was conducted, in order to evaluate the research area, specifically the description of the population, the identification of the intervention, the alternative or traditional educational procedures, and the results according to the way of completion, improvement or influence (Palaskar, 2017; Satya-Murti, 2000).

Criteria for the inclusion of the researches include parameters such as focus on the subject, method of primary research, and quality of research (G. D. Thomas 2012). The main eligibility criteria of the systematic review concern:

- i. The research approach used in the publications included experimental, quantitative, and qualitative research.
- ii. Original and primary publishing were included.
- iii. Publications were written in English, and were available in their entirety.
- iv. Publications can be found in reputable scientific journals.
- v. Publication date identified: January 2010-December 2020.
- vi. Primary search terms were “Disaster”, “Education”, “Adulthood”, “Safety” and “Information”.
- vii. Adults, notably disaster-vulnerable populations such as the elderly and disabled, were the recipients of education. Moreover, women due to their nature concerned maturity and social position in several countries are discussed as a sub-category of the population.

The systematic review was carried out through the bibliographic databases Pubmed, Science Direct, Web of Science using the logical AND and OR operators that allowed the search criteria to be combined in a clearly defined way. A total of 558 publications and papers were retrieved and narrowed down to 13, in accordance with the Prisma Flow Chart criteria (Liberati et al., 2009).

RESULTS

Most studies included in this sample were published either between 2010 and 2015 (30.8%, n = 4) or between 2016 and present time (69.2%, n = 9). Multiple study designs were employed, though most of them were quantitative and qualitative in nature. As far as the study location, 7 (53.8%) studies located in Asia, 2 (15.4%) in Australia, 2 (15.4%) in North America, 1 (7.7%) in Caribbean, and 1 (7.7%) in Europe. Last but not least, at the 61.5% of the studies, participants were residents.

Table 1. Prisma Flow Chart

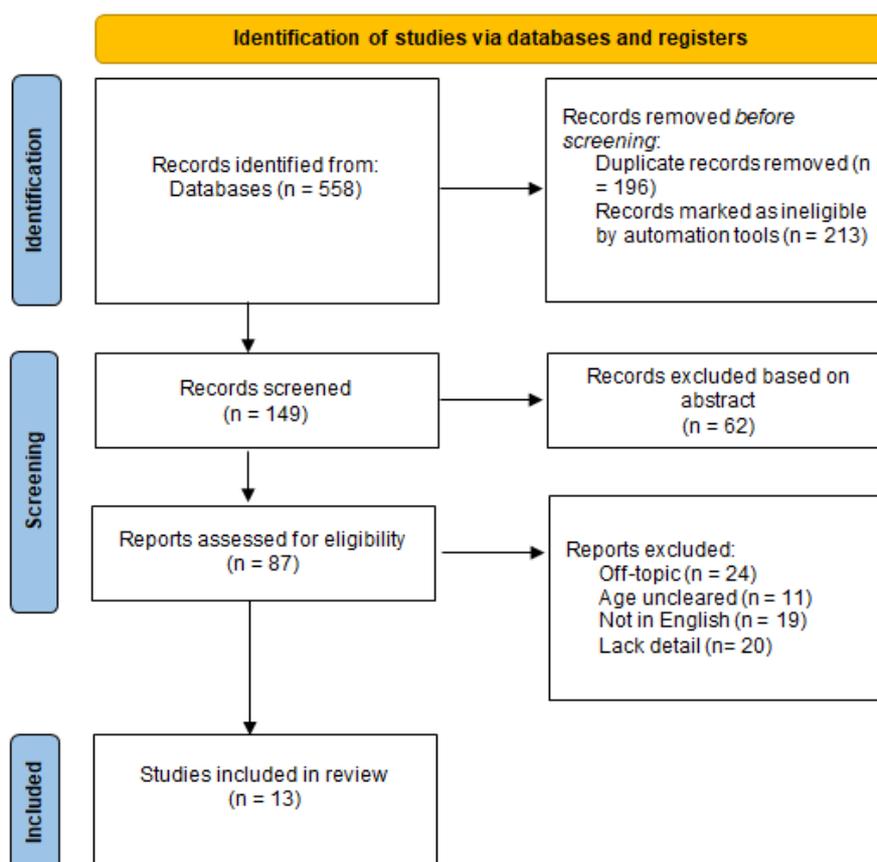


Table 2. Brief representation of the articles included

No	Authors	Year of publication	Year of research conduction	Country	Participants	Methodology
1.	Cooper, et al.	2019	Unclear	Australia	16 participants (8 educators and 8 practitioners)	Qualitative semi-structured interviews
2.	Tsai, et al.	2019	Unclear	Taiwan	67 university students	Experiment Quantitative questionnaire
3.	Chou, et al.	2015	2010-2012	Taiwan	178 borough presidents and officials	Quantitative questionnaire Qualitative observation
4.	Chou and Wu	2014	2010-2012	Taiwan	Community – based observation	Qualitative observation
5.	Drzewiecki, et al.	2020	2018	Saint Kitts and Nevis	343 adult citizens of St. Kitts	Quantitative questionnaire
6.	Rogayan and Dollete	2020	2015-2016	Philippines	480 residents of Zambales	Quantitative questionnaire
7.	Teo, et al.	2019	2017	Australia	180 residents	Quantitative

					from a variety of ethnic and language backgrounds in Logan City	questionnaire
8.	Guo, et al.	2020	2018	Hong-Gong China	1015 adult residents through a random-digit dialing method	Quantitative questionnaire
9.	Almazan, et al.	2018	2015	Eastern Philippines	26 adults divided in groups with specific criteria of experience or no experience with typhoons	Interviews and questionnaire
10.	Thayaparan, et al.	2015	Unclear	United Kingdom, Lithuania, and Estonia	25 academics, researchers and representatives of government and semi-government organizations	Mixed methods
11.	Yong, et al.	2017	2011	Canada	921 Canadian Born & 163 Immigrant, Canada, residents	Quantitative questionnaire
12.	McGee	2011	2006	Canada, Australia, and United States of America	19 residents and cottage owners	Qualitative semi-structured interviews
13.	Hoffmann and Muttarak	2017	1 st phase Thailand: 2013 2 nd phase: Philippines: 2014	Philippines and Thailand	2199 households participants (n Philippines =889 and n Thailand= 1310)	Quantitative questionnaire

Disaster safety education is fundamental to disaster risk reduction, disaster management, and disaster safety (Bhandari, 2014). Disaster safety education is being researched within a multidisciplinary approach, and an emphasis on disaster mitigation. The primary research methodologies were qualitative, particularly case studies that included narration, and risk scenario creation. All the 13 publications indicate the importance and necessity of disaster safety education (Almazan et al., 2019; Chou et al., 2015; Chou & Wu, 2014; Cooper et al., 2020; Drzewiecki et al., 2020; Guo et al., 2020; Hoffmann & Muttarak, 2017; McGee, 2011; Rogayan & Dollete, 2020; Teo et al., 2019; Thayaparan et al., 2015; Tsai et al., 2020; Yong et al., 2017).

IMPLICATIONS

A disaster may produce a wide range of global implications. Each individual's response is unique, and the reasons behind it might involve a number of educational, religious, and social criteria (Godin et al., 2009; Guo et al., 2020; Hidalgo & Baez, 2019). Internationally, disaster education initiatives have been shown to promote disaster preparedness and resilience (Aghaei et al., 2018; Lin et al., 2018). Women

are generally perceived as vulnerable and suffer numerous challenges during a disaster due to their different societal responsibilities (Fernandez et al., 2002; Fox & Timm, 2008). According to researchers, elderly individuals require specialized training due to their physical state and cognitive decline. Furthermore, psychological assistance from the young to the elderly is critical in catastrophes, and this should be included as one of the essential educational objectives (Bell et al., 2020; Fernandez et al., 2002; Timalisina & Songwathana, 2020). Research has shown that training the elderly and individuals with disabilities on how to deal with danger and disasters is closely associated to their survival (Thomas et al., 2015).

According to Shiwaku et al (2007), disaster education's responsibility is to empower learners with knowledge and awareness while also promoting precautionary practices. To accomplish this, participants are expected to be educated about disaster risk reduction, obtain knowledge about pre-disaster mitigation, and apply that knowledge (Shiwaku et al., 2007). Improvement in disaster prevention may directly benefit community residents, and such activities imply people's willingness to engage (McGee, 2011). The most important aspect of any society is its people, and community engagement is essential in any effort to improve any educational techniques of coping with crises and disasters. Increasing community cohesion allows for the rationalization of disaster prevention and recovery efforts (Chou & Wu, 2014).

Drzewiecki et al (2020) developed a community-based program for the resilience of disasters in the West Indies. The findings of this study can be used to cope with challenges to natural hazard-induced crises in various disaster scenarios. This study's findings, for example, may be utilized to create community resilience educational programs. These culturally specific initiatives should be applied in all states, particularly those that are more vulnerable to natural disasters (Drzewiecki et al., 2020). Similarly Rogayan and Dollete (2020) pointed out the significance of educative programs in preparedness of the residents as far as disasters and natural phenomena concerns (Rogayan & Dollete, 2020).

A considerable number of studies have indicated the importance of disaster education to various age groups in society at all levels (McGee, 2011). It is worth emphasizing, however, that persons who are vulnerable require specific training and care from qualified and skilled people (Almazan et al., 2019; McGee, 2011). The concept of culture and the dynamics of the religious attachment of individuals, especially older people, is emphasized in the study of Almazan, et al. (2019). Indeed, the cultural, societal and religious context can play specific roles in terms of resilience and the rehabilitation of specific psychological and social parameters. Social norms can increase the acceptance of training programs related to crisis and disaster management, as social inclusion and social acceptance are considered important parameters of sociability and socialization, especially of older people (Almazan et al., 2019). The results of Teo et al (2019) suggested that policymakers should take into account how different racial and ethnic groups interpret and manage for disasters, as well as build disaster management and communicating strategies that account for diverse linguistic abilities (Teo et al., 2019). In order to be achieved the improvement of urban resilience in coastal locations, new communication channels for urban management and community-based emergency preparedness should be established (Guo et al., 2020).

The socio-economic status of individuals is directly linked to their ability to recover quickly and efficiently after a disaster or crisis. Studies show that the income, the permanence of the house, the property status,(ie rented or privately owned) affect the treatment of disasters in all three stages, namely before the onset of the disaster, during it and after its end (Baker et al., 2011; Harvatt et al., 2011; Mcneill et al., 2013). The correlation of demographic and socio-economic characteristics with the promotion of education on crises and disasters is underlined by Hoffmann, and Muttarak (2017). The socio-economic segregation of the research teams, namely those living in the Philippines and Thailand, seems to shape specific characteristics of resilience, preparedness and acceptance of crisis and disaster education. Moreover, the authors conclude that regardless of the dependent parameters of income and social status, education yields positive results. To improve disaster preparedness, social groupings as immigrants may gain from a risk management and communication insurance that provides these risk perception characteristics. Considering the immigrant community's variety, several programs will need to be evaluated further by demographic segmentation (Yong et al., 2017).

There is a significant relationship between education, increased risk perception, and students' risk mitigation efforts, according to research conducted and included in this systematic review.

Encouraging residents and adults in general to consider the value of preventative actions and readiness may enable them connect knowledge, understanding and acting. Moreover, it is worth mentioning that the majority of the studies were conducted in regions such as Taiwan, Philippines, with the percentage of European countries appearing the least (Thayaparan et al., 2015).

It is well mentioned bibliographically that disaster education initiatives will increase citizens' and communities' preparedness and resiliency to disaster. The information is detailed in the Hyundai document from 2005 to 2015 (Bray, 2001). Bibliographically, various methods are proposed to achieve the effectiveness of educational programs related to dealing with and managing crises and disasters, as well as the optimization of existing ones. The inclusion of all individuals, regardless of physiology or the presence of disability, adults and minors, becomes particularly important, as a reasonable crisis or disaster concerns each individual individually but also as a member of each community (Almazan et al., 2019; Torani et al., 2019).

The expansion of critical thinking through the use of new information systems and education technologies is considered to be well documented in education-related studies. Disaster education promotes critical thinking and the preparedness of aid providers and crisis and disaster managers, but it should also promote critical thinking in the general population. Additionally, the concept of inclusion is mentioned in the study sample of Cooper et al (2020) as a key factor in effective crisis and disaster education. The theory of communication and in particular the communication channels that can be created through educational programs validate the basic theory of communication effectiveness. Finally, in training programs through technology, special emphasis is given to the achievement of metacognitive goals, which in the case of management and response to crises and disasters are considered necessary (Cooper et al., 2020).

The training in general is based on various techniques that are part of theories either traditional or experiential. Experiential learning is characterized by a high degree of acceptance and effectiveness, as the learner creates a framework of experiences through which he/she is trained. The inclusion of games in the educational process can extend these results, especially in crisis and disaster management education (Thayaparan et al., 2015). It is worth noting at this point that the various games which can be either in real conditions or with the help of computers are aimed at all types of learning, formal and informal and at all ages. Through the electronic game Battle of Flooding Protection created by Tsai et al (2019) based on Colb's theory, the advantages of constructivist learning theory were demonstrated, namely learning motivation, enhancing the learning situation and the effectiveness of cognition. The main result of this study concerns, in addition to the above mentioned educational results, the empowerment of the participants in terms of resilience and preparedness in case of crises and disasters (Tsai et al., 2020).

The study of Chou et al (2015) clarifies that the effectiveness of training programs in crisis and disaster management depends on various parameters such as the satisfaction of the learners, the performance of the trainer, the design of the program, and the level of literacy of the learners as far as disaster prevention concerns and their response to crises and disasters. The authors point out that a key parameter for the effective response to crises and disasters is the education of the population as a whole and not individually (Chou et al., 2015).

Disaster education should indeed be directly mentioned nowadays as a strategy to promote residence resilience and information transfer in order to lessen the risk of catastrophes in their communities (Sawada, 2007). Several studies have shown that proper-educated individuals in community may be prepared for emergencies and react appropriately. Furthermore, some claim that disaster education is a structural, functional, and cost-effective risk management technique (Bhatia et al., 2008). As a result, understanding catastrophe prevention and risk reduction approaches from childhood, with special emphasis on education in adulthood, becomes extremely beneficial.

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LEADERSHIP

LEADERSHIP AND CHANGE IN THE GREEK SYSTEM OF PRIMARY & SECONDARY EDUCATION

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ABSTRACT

The present research is an attempt to capture the reality of changes in the school units, regarding the relationship between the principal and the teacher. We wanted to check in the Greek system of Primary and Secondary Education, whether the "individualized consideration" (Bass, Avolio, Leithwood) that employees receive, in periods of change, is appropriate, to lead to feelings of satisfaction for the leadership provided and to facilitate the adoption of change. And finally, whether the whole process is influenced by the perceptions and attitudes of the employees about their manager (Fullan 2002, Day et al 2000).

Key Words: relations-oriented change management, transformational leadership, employees' satisfaction, school units, directors' effectiveness.

METHODS

We sent our electronic questionnaire to the schools of the 13 administrative districts of the country and asked people (N=499 persons) working in the educational system to:

- Evaluate the skills and effectiveness of their manager, and rate their satisfaction with the manager's contribution to the operation of the unit as a whole and to their own effectiveness in particular.
- At the same time, we requested the evaluation of the functionality of the actions and skills of the manager and we investigated its connection with the perception, acceptance, and coexistence of the employees with the changes.
- Finally, we asked them to rate the detection rate of some variables that are desirable leadership behaviors in times of impending change, and their presence or absence, reflects the leadership profile of the manager, informing us about the organizational context in which change occurs. We formulated the research hypotheses for which we tested the multivariate analysis of variance MANOVA and came to important conclusions.

Not only teachers but also principals and deputy principals of school units took part in this process in order to have a whole picture of the leadership phenomenon and the relationships that are formed within the unit in a 360-degree evaluation attempt. In other words, the questionnaire functions as a tool for feedback and measurement of interpersonal influence and promotes administrative awareness and planning interventions to improve the interactions that develop in the organization.

This way we evaluated the relationship between the teachers and the director and these two dimensions that concern: The "perceived leader effectiveness" and the "job satisfaction" of the employees in the school unit (Bass & Avolio).

To test the relationship between teachers' personal characteristics and their perceptions of the principal's abilities, we used the test of independence x chi-square test.

The regularity of the dependent variables (the evaluation of the managerial practices) was checked with Shapiro-Wilk and a visual examination of the histograms of each variable was found and the distributions were found to deviate significantly from the normal one. Therefore, the descriptive index that best represents the data of the variables is the median, and to examine the relationships of these variables with the characteristics of teachers, non-parametric statistical tests were used, namely the Mann-Whitney test.

- To investigate the consistency of the participants' answers to the questions about the subordinate-boss relationship and the questions about the reality of the change, a calculation of the Spearman correlation coefficients (non-parametric control) was performed

FIRST PART - THEORETICAL FRAMEWORK

Impact of leadership on organizations

It is a common assumption and all research internationally contributes to the emergence of the leading factor as a strong predictor of employee performance and outcomes. (Bush & Jackson, 2002, Davies ,2009, Kladis,2017).

The potential of leaders to have a positive impact on teacher empowerment and consequently on learning outcomes resulting from teachers' job satisfaction and the enhancement of feelings of workplace citizenship activated by the leader's attitude is found over time (Day et al, 2009, Matthews, 2009, Hallinger, 2011, Hoy & Miskel 2013, Kladis, 2017). The quality of leadership and the way the school is organized and managed promotes innovation, encourages creative thinking, and enhances motivation to act (MacBeath 2005, Kladis, 2017).

The research of Pasiardi & Savvidis, (2000) showed that female managers in education, make better use of their emotional skills in practice. They use more democratic - communicative speech creating motivation, resulting in individuals working more productively, with high morale, and eventually the schools they manage, achieve better results (Athanasoula - Reppa, 2008). In the same vein are the results of surveys conducted by Eagley et al. (1990) (Saitis, 2007, Chatziaggelaki, 2018).

Little (1995), in his research, identified clear evidence of the positive effect of the manager-leader on teachers' self-efficacy and morale levels (Chatziangelaki, 2018).

Isen (1999) states that the leader who manages to activate positive mood and pleasant emotions in his team mobilizes their cognitive effectiveness, and contributes to a better understanding of information and flexibility of thinking (Chatziangelaki, 2018).

Transformational leadership according to Emery & Baker (2007) seems to influence not only job satisfaction but also determines job commitment (Belias 2015).

Besides, the mutual relationship between job commitment and job satisfaction has been proven (Riaz et al,2011, Belias 2015) Transformational leaders inspire employees to work harder, offering them the idea of a shared vision in which the well-being of the organization is directly related to their personal development and fulfillment (Shamir, Zakay, Breinin&Popper 1998, Givens 2008, Belias 2015).

Heskett in his findings states that leaders who create a strong organizational culture manage to make a difference of 20-30% in corporate performance compared to mediocre - weak competitive cultures (Belias 2015)

The changes in education

In the context of evolving social change, adaptation mechanisms are needed to cope with the new conditions that arise. And the readiness for reform in education is put forward as a necessity, because only in this way it is possible to remove the mismatch between society and the school and prevent its dysfunctionality (Terzis, 1993). In the same way, one of the many definitions of school effectiveness is "ensuring a rate of learning equal to or greater than the rate of change in the external environment"

(Chatzipanagiotou, 2008), thus underlining the value of the school's adaptability and its alignment with the needs of society.

The role of the principal and his/her relationship with teachers in the adoption of change

"Machinery is getting old, buildings are deteriorating, systems are becoming obsolete. The only element in an organization that can improve, evolve, and become more efficient is the human being, as long as the leader understands his potential and supports him in realizing his full potential" These words of John Maxwell, concentrate on the value of human potential as an asset and valuable capital of the organization, which in order to maintain and maximize its value, needs the supportive role of the leader.

A review of the literature on educational change and leadership highlights the role of the principal as the most important agent of school improvement (Fullan, 2001; Sergiovanni, 2000; Stoll et al., 2003) According to Total Quality Management, individuals are the driving force for quality improvement and effective system change (Deming, 1993, Athanasiou, 2016). Therefore, the transformation of the school unit goes through the transformation of employees and culture first and foremost, and in this direction, the manager-leader of educational units is called to take the necessary actions that will enhance the self-efficacy and empowerment of his team by systematically and empathetically methodizing the passage to the new situation.

Because the way of managing change is identified with the culture of the organization, that is why we talk about the need to integrate leadership in the management of educational organizations, so that leaders think in terms of change and renewal (Gardner, 1990), facilitate a smooth transition, convincing subordinates of the value of their project and accompanying them on a journey of personal growth and organizational development.

Managers who do not consider the human factor important -since it is people who will be called upon to implement change and operate effectively in the new environment- predispose them to failure (Tunda, 2016).

The foundation of leadership and a predictor for the success or rejection of the changes attempted by the leader is **trust** (Bryk & Schneider, 2003, Creswell, 2016). The manager-leader is responsible for creating a positive climate and maintaining **trusting relationships** with the potential of the organization, variables that determine the formation of attitudes towards him/her and influence the levels of participation and achievement of the team according to the goals set at any given time (Trivette & Hamby, 1992).

Hoy and Tschannen - Moran (1999) identified five aspects of trust (Creswell, 2016) and all of them are related to individual traits and behaviors of the manager-leader, referring to the main components of leadership research internationally: personality, leader characteristics, and practices (Bourdie, 2005, Moissidou, 2013).

Steven Covey, (2006) identifies trust as the highest form of motivation and for this to occur, leaders with knowledge, skills, abilities, and individual characteristics - personality traits, are required to inspire, guide, and create through the cultivation of trusting relationships and collaborative bonds.

It is known from the literature that attitudes such as job satisfaction, organizational commitment, and perceived organizational support, show a positive correlation with a manager's leadership style and competencies. By understanding people's needs and desires, the leader, can motivate more effectively and settle issues that cause conflict. By listening to concerns about the gaps and weaknesses of his team, he sets the stage for a win-win relationship by reducing resistance to change and ensuring the consensus and cooperation of the group. In addition, by exposing himself to criticism from employees, he acquires valuable information and through access to data evaluating his actions and practices, he puts himself on a trajectory of self-awareness, reflection, vigilance, and control with the aim of eliminating errors and modifying processes.

It is worth emphasizing the importance of the positive expression of the leader's emotions and the power of transmission that their mood consistently has on the results of their work. A possible explanation is that employees interpret the leader's positive mood as optimism about their performance, thus increasing their self-efficacy and performance (Bono & Illies, 2006; Towler & Dipboye, 2001; Gaddis et al., 2004; Potiraki, 2017).

"When leaders are liked, employees make extra effort for their sake (Johnson, 2009) while when they dislike their leader, they are indifferent and refuse to comply with his wishes (Ashforth & Humphrey, 1995) and their performance is poor (Bass,1985) » (Potiraki, 2017).

There is a wealth of empirical evidence supporting that the organizational support of the leader-manager to employees is related to:

- With stress reduction (Lee & Ashforth, 1996)
- With the reduction of burnout (Lewin & Sager, 2008)
- With the increase in job satisfaction which always goes hand in hand with commitment and dedication to work (Maslach, Schaufeli & Leiter,2001) (Perrotis,2021)

REASONS FOR THE FAILURE OF THE CHANGE

The paradox of change is characterized by the fact that while change is vital and flexibility/adaptability is considered the capital for adaptation, survival, and growth of organizations, however, 2/3 of changes attempted worldwide in businesses and organizations fail (Bernard & Stoll, 2010, Petras,2017).

This is because the needs and feelings of the people are not taken into account and those in charge are bamboozled by the idea that a decision of the central administration is enough for a top-down route without obstacles. But change is a process, not a fact. And as a process, it requires time and subtle manipulations and certainly does not exhaust itself in the formulation of a top-down order. If members do not put forward their suggestions and concerns (Sarason,1990, Athanasiou, 2016), they will lose interest and will not work in the desired direction (Hopkins et al 1996, Day, 1999, Athanasiou, 2016).

People are asked to leave a state of equilibrium, something known, familiar, and predictable and move to a state of a new equilibrium. The path is not linear and conforming to the norms of a change constitutes an arduous and demanding task. Resistance in these cases must be seen as part of a normal, broader process and certainly, an open, supportive approach is needed to allow individuals to acclimatize and function in the new context that is taking shape.

The leading manager is required to use persuasion and by example, participative presence to guide the team, manage conflict and maintain focus on what is required.

SECOND PART - RESEARCH APPROACH

Our main question concerns the impact of the relationship between the principal and teachers on the reality of change (their lived experience) in the school unit.

Fiedler defined leader-member relationships, as the degree of loyalty, trust, and respect members have for their leader and stated that the better the relationships the more control and influence the leader has. The affective events theory of Weiss & Cropanzano (1996) guides our research. According to this theory, emotions shape an individual's perception, of the value of his work, the place he works, and the group he belongs to and affect his behavior accordingly. Work events should not be ignored, because they accumulate and cause undesirable behavioral reactions-responses. If the manager-leader takes care of the emotional harmony of the employees and takes care to stimulate their mood and boost their morale through praise, recognition, and mental motivation to high achievements, it is more likely that as a result of the recognition and management of emotion that he applies, subordinates will appear more positively disposed to his suggestions and exhortations. In fact, the mere fact that one appears to care about one's subordinates is most often rewarded with loyalty (Robbins, Judge, 2011).

Ciarrochi et al. (2000) (Potiraki, 2017) concluded that leaders with a high emotional intelligence index perform better in carrying out their managerial responsibilities. And in the Greek area, it was proven by research the existence of positive relevance between emotional intelligence and communication among team members leads to excellent results (Fragouli, 2009).

Especially in the case we are studying and the changes cause such a range of emotions and reactions, it is essential to have meaningful relationships, and cohesive teams, where the genuine interest of the leader will surround the team members with the confidence and encouragement required by the project in order to relieve any anxiety and renew their strength and desire for the project that commits their time and energy.

The manager's ability to self-regulate for the benefit of his/her peace of mind and by extension his/her relationship with the people around him/her, increases respect and appreciation towards him/her and at

the same time willingness to cooperate with him/her (Brouzos, 1998) According to Fried (2001) teaching and leadership are deeply emotional activities and " if the emotional dimension of the process is ignored, emotions will invade through the back door" (Hargreaves, 1997), (Potiraki, 2017).

The leader's meaningful contact and communication with employees emerge as vitally important, as an adequate supply of information about the planned change, encouragement and emotional support from the manager regulate burnout and act as a regulator of depersonalization (Greenglass et al.1996) Furthermore, inspirational motivation in the form of a clear mission statement increases the levels of optimism and enthusiasm of the team(Dybinsky et al 1995), and as Ashkanasy & Tse(2000) conclude, transformational leadership by utilizing the relationship that develops between the leader and team members can persuade them to adopt positive attitudes towards innovative ideas and innovative projects. (Potiraki, 2017).

Based on the literature review of the first part of the paper, we identified a set of factors-variables that the researchers highlighted for this field.

According to what we described above, we tested the reality of the changes (or the contribution of the school leader to the smooth adoption of the changes by the employees of the educational organization) in the light of three parameters, which are the following (dependent variables):

- The perception of changes by teachers with the contribution of the headteacher is determined by two variables: a) Dimension of acceptance of changes by teachers with the contribution of the headteacher of the school unit and b) Drafting- teachers' involvement in the changes through the contribution of the Head of the School Unit
- Teachers' coping with changes through the contribution of the Head of the school unit, which is modulated by two variables a) Change driven continuity of teachers' actions through the contribution of the Head of the school unit and b) Teachers' experience of their previous actions through the contribution of the Head of the school unit
- Teachers' sustained performance in the daily life of change through the contribution of the School Unit Director, which is composed of the following two variables a) Acceptance of the new through the School Unit Director's contribution to teachers' performance and b) The Director's assistance to teachers in their performance in the changes

All three of these dependent variables are defined by the relationships between the principal and teachers in the school units, with regard to the various changes that occur in the operation of these units.

In the same way, we approach the dimensions that make up our independent variables in order to test the influence of the three independent variables (with their respective subdivisions) on the configuration of the three dependent variables mentioned above. We, therefore, define the three independent variables describing the relationship between the principal and teachers in the school unit as follows:

- Teachers' satisfaction with the functioning of the school unit (S.U.) is divided into the following two variables a) teachers' practical satisfaction with the functioning of the school unit and b) teachers' practical satisfaction with the principal's contribution to teachers' effectiveness
- Competencies of the S.M. principal are determined by two variables a) organizational competencies of the school unit principal and b) administrative competencies of the school unit principal
- Functionality of actions and competencies of the school principal which includes two variables related to a) effectiveness of the actions of the school principal and b) intellectual competencies of the school principal

Based on the above, three research hypotheses are formulated which are examined in terms of the dependent variables:

H1: "Teachers' and school unit principal's relationships" influence "teachers' perception of change with the principal's input".

H2: "Teacher-principal relationships" influence "teachers' coping with change through the contribution of the school principal".

H3: "The relationship between teachers and school principal" influences "Teachers' sustained performance in the daily life of change through the contribution of the school principal".

Research tool

The research tool used was constructed by the supervising professor (Konstantopoulos, 2019) and consists of three parts. The first part consists of 10 questions and is dedicated to demographic variables and social characteristics of the participants (gender, level of education, age, years of work in the position, etc.) "These personal data are important, to the extent that social factors, influence the behaviors of individuals and the formation of their representations"(Chatziangelaki Dimitra,2011)

The second part concerns the relationship between teachers and the principal and consists of 6 questions on a 3-point Likert scale. Its reliability was found after the test was conducted high (Cronbach's alpha = 0.921).

Finally, the third part concerns the reality of the changes and consists of 6 questions on a scale from 1 to 100, where a higher score indicates a better experience regarding the reality of the changes. The reliability of this part also proved to be high (Cronbach's alpha = 0.980).

Regarding the validity of the instrument, we made sure that the internal structure was robust and that the scales we used (factor structure) (Creswell,2016) were directly related to the theory presented in the first part of our paper. Evaluating the validity associated with the criteria (predictive and covariate) we gathered evidence from numerous studies that provide support to validate the values of our research tool (Creswell, 2016).

The sample

The sample of this study (499 individuals) was obtained by simple, random sampling.

1. Geographically spread across all regions
2. Includes participation from the majority of the disciplines of teachers serving in education
3. Covers all positions in the hierarchy that exist in an educational organization (teachers, vice-principals, directors)
4. Finally, the fact that it offers data for both levels of education (primary and secondary) is another advantage that allows for comparative access and more creative approaches.

For the analysis of the data collected through our online questionnaire (Google Form), we chose the statistical program IBM SPSS (v.25)

FINDINGS

The shocking impact of personal characteristics on perceptions of the principal-teacher relationship and the reality of change

A statistically significant relationship was found between the working relationship (contract or permanent staff) and teachers' practical satisfaction with the operation of the school unit and specifically, it was found that the majority of participants who stated that they would change many or a lot are permanent (81.8%), compared to the percentage of permanent participants who would change some (71.4%) and the percentage of those who would change little or nothing (65.3%).

A statistically significant relationship was identified between the working relationship and teachers' practical satisfaction with the principal's contribution to teacher effectiveness It was found that participants who report the non-existent or very low contribution of the Director to their effectiveness are overwhelmingly tenured (86.3%), compared to the moderate and high effectiveness categories (68.8% and 70.4% respectively).

A marginally significant relationship was found between job relationship and perceptions of managerial competencies of the manager, specifically, it was found that participants who rated their manager with non-existent or minimal managerial competencies were overwhelmingly tenured (83.1%), compared to the moderate and high competency categories (64.3% and 71.3% respectively).

A statistically significant relationship was found between job position and teachers' practical satisfaction with the contribution of the principal to teachers' effectiveness and specifically, it was found that Principals - Assistant Principals report high effectiveness of subordinates due to their own contribution at 72.6% while teachers perceive high effectiveness from the contribution of their principal at 55.2%.

A statistically significant relationship was found between job position and perceptions of organizational skills and in particular it was found that Directors - Assistant Directors assess that their

supervisors have many organizational skills at a rate of 84.9%, while teachers positively assess the organizational skills of their director at a rate of 66.7%.

A statistically significant relationship was found between job position and perceptions of managerial skills and in particular it was found that Directors - Assistant Directors perceive that their supervisors have a lot of managerial skills in 84.9% while teachers positively evaluate the managerial skills of their director in 67.7%.

A statistically significant relationship was found between job position and perceptions of the effectiveness of direct supervisors and in particular it was found that Directors - Assistant Directors assess that they are effective at a rate of 82.1% while teachers positively evaluate the effectiveness of their director at a rate of 64.6%.

A statistically significant relationship was found between job position and perceptions of intellectual abilities and in particular it was found that Directors - Assistant Directors assess that their supervisors have many intellectual abilities at a rate of 84.9% while teachers positively assess the intellectual abilities of their director at a rate of 70.7%.

In order to investigate the consistency of the participants' answers to the questions about the subordinate-supervisor relationship and the questions about the reality of change, Spearman correlation coefficients were calculated. The absolute consistency and the strong correlations ($p=0.000$) observed in all dimensions related to the two categories of variables, lead to the conclusion that the quality of the principal educators' relationship affects the reality of changes and therefore, by improving the quality of the relationship, one can intervene and regulate the resistance presented by the employees to each new project proposed by the principal.

Results of the MANOVA: we found that the hypotheses were confirmed.

IMPLICATIONS

Of particular interest are the bivariate analyses that reflect teachers' satisfaction with the functioning of the school unit and assess the handling and skills of their principal. It is striking that of the percentage of teachers who stated that they would change many or a lot of things in the unit if they took the position of the director, 81.8% are permanent, while the corresponding category of substitutes/hourly employees reached 18.2%. This may be explained by the fact that teachers who are not permanent staff of the unit, because they are constantly changing their place of work, are slow to integrate, feel accepted and equal members of the organization and since they do not have time to form a complete picture and move to the next stage of proposals and improvements, they are more reserved in their judgment. They are probably also motivated by a subconscious tendency to conformism in order to maintain balance and socialize smoothly in the new environment. Others might say, perhaps, that it is not even worthwhile to go through the process of spending time and energy on hypothetical scenarios of reforming a unit from which they will have left against their will the following year. After all, when in the middle of the same school year a teacher, in order to fill up his/her teaching hours, moves within the week to 4-5 different schools or is asked to teach and evaluate subjects for which he/she is not adequately trained, then probably the change that he/she feels needs to be made, does not concern the specific school units but the whole system responsible for the organization, planning and timely staffing of the units with the most appropriate personnel.

Next, we wanted to test whether teachers' assessments of the principal's contribution to their effectiveness, are consistent with the impression that supervisors themselves have of their contribution to the performance and effectiveness of their subordinates. As expected, the difference between teachers' and principals' attitudes/evaluations was reflected in the percentages. Specifically, of the principals who consider their contribution to be high, we obtained a percentage of 72.6% while only 55.2% of teachers share this perception of their supervisor. The existence of even a minimum percentage of teachers who are not satisfied with their relationship with the principal should be evaluated and care should be taken to smooth out the differences and eliminate factors that inhibit the development of the stakeholders in the organization.

Because it is clear from the literature, that teacher dissatisfaction is reflected in their behavior and job performance and affects their levels of commitment and dedication to their work. This creates a vicious

circle with the recipients of this problematic relationship being the students, who receive poor quality teaching services and yield corresponding learning outcomes.

There is an equally wide gap between the views of teachers and sub-managers regarding the organizational skills of the supervisor. That is, from 66.7% of teachers who believe that the organizational abilities of their principal are many, a jump appears in the group of principals that raises to 84.9% the principals' assessment of the organizational abilities of their supervisors. This different view of things between what teachers believe supervisors do or have, versus what principals actually do or have (according to their own subjective perception of reality) can be a source of disagreement or even conflict in the workplace.

Obviously, we cannot pass over such a difference as negligible. And it certainly highlights the importance of a 360-degree assessment for a more complete picture and constructive feedback on all functions in the organization.

Because feedback, takes on a different scope -meaning when it is utilized by scientists involved in organizational behavior and human resource development, for whom, every point above in the rates of job satisfaction/performance/productivity, implies crucial changes for the organization and more broadly for the society, in which this result is diffused, with the dimension of outputs at the local, regional, national level.

It, therefore, follows effortlessly from the above that even if there are 30 dissatisfied teachers, each of whom teaches weekly in 5 classes of 25 students, the impact of the relationship with the principal is not limited to the 30 teachers but extends to 3. 750 students who absorb this dissatisfaction in the form of their teacher's mediocre performance and consequently all the stakeholders who have an invested interest in the optimal development of the potential of the graduates are also harmed.

The results related to the reality of change were impressive. The scores that managers scored for managing change varied significantly depending on the group scoring each time. In particular, there is a large gap/divergence/mismatch that is, as we found previously with the variables related to the dimension of relationships, so now, with the variables related to the dimension of changes, we identify a tendency for the group of sub-managers to rate much higher than teachers the contribution of the manager in the management of changes. In other words, what teachers experience is not in line with the perception of the principals, who, perhaps overestimating the effectiveness of their handling or due to a lack of communication and honest criticism, form an embellished image of effectiveness, which is far from the perception of their team.

The fact that there are teachers who rate so defiantly low on the behavior and abilities of their principal, causes concern about the causes of the phenomenon and refers to speculations about the existence of toxic leaders who crush the Greek education system and degrade the culture in the organization, dynamiting the atmosphere and inhibiting the positive mood and enthusiasm of the team. It is imperative that action is taken on this issue which needs to be investigated and affects employee performance and commitment.

The usefulness of the research is highlighted by the conclusions that emerge and reflect the current situation regarding the relationships between principals and teachers. It would be useful to be utilized for reflection by principals in order to improve their management style and effective collaboration with teachers. This questionnaire could be used for internal evaluation -formative- in the school units and to start, with the results as a starting point, an honest approach to improving the relationship through new practices and procedures, more participatory, oriented to the empowerment and self-efficacy of teachers. This could include substantial opportunities for democratic governance extending to the selection/appointment of a headteacher by the relevant teachers' association

Personalized support, responsible guidance, and the encouragement of self-direction and experimentation will put schools on a growth trajectory, fostering innovation and, through the culture of learning they foster, will lay the foundations for innovative approaches centered on people and aimed at their well-being and the full realization of their potential. When this happens and the students who attend, reproduce it, then a different kind of communication is established for Greek schools, on the basis of equality, mutual acceptance, dialogue, and progress.

The need for in-school training and counseling in interpersonal communication, empathy, and leadership is evident across the breadth of our research on education.

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THE EFFECT OF THE LEADERSHIP MODEL OF THE DIRECTOR OF THE EDUCATION UNIT ON THE SPECIAL EDUCATION TEACHERS' BURN-OUT

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ABSTRACT

The aim of the present study is to investigate the effect of the leadership model of the managers of the educational units on the burnout of special education teachers, by conducting a quantitative research. Specifically, three research questions were asked and it was investigated the degree to which special education teachers exhibit symptoms of burnout, the existence of a link between special education teachers' burnout and the leadership model of the principal of the educational unit and the existence of differentiation on the degree of the special educational teachers' burnout in relation to their individual demographic characteristics. The results of the research showed that special education teachers do not show severe symptoms of burnout. The importance of research lies both in informing and alerting special education teachers about the existence of burnout syndrome and in raising the awareness of the managers of these educational organizations for the correlation of this syndrome with the leadership style they adopt and its impact to the psychology of the employees.

Key Words: Special education, burnout, leadership style.

INTRODUCTION

The constant challenges and difficulties of the professional arena have led to the emergence of burnout, which is a psychological syndrome characterized by the development of emotional exhaustion, depersonalization and a sense of reduced personal fulfillment in mostly social workers (Maslach, 1999). Special education teachers are a professional group with significant chances of burnout, due to the nature of the services they provide and the development of close communication relationships with the recipients of the services (Grigoropoulos & Kapaltsidou, 2020). This paper investigates the phenomenon of burnout of special education teachers and the relationship it may have with the leadership model applied by the director of each educational unit.

NECESSITY OF RESEARCH

The necessity of this paper is based on the existence of a gap that exists in the existing literature on three important issues. The first issue that needs to be investigated is the effect of the leadership model exercised by the director of the educational unit on the burnout of special education teachers. The second issue concerns the differentiation of the degree of burnout of special education teachers in relation to their individual demographic characteristics. There is also a need to further investigate the degree of burnout shown by teachers serving in special education schools. Finally, the Greek researches that have studied the specific issues are limited and have presented differentiated and contradictory results, thus making the present research necessary.

The professional team of special education teachers is numerous and heterogeneous with the result that the issues under study occupy to a large extent the specific employees in their effort to be efficient and effective in their teaching work. The daily routine of special education teachers and their efficiency are influenced by the school in which they work, by its culture and climate, by the principal and by the developments of their environment, which in turn affect the educational units and their students. In modern times the role of the teacher is multifaceted and demanding, as they are in charge of the sensitive task of educating and including students with special educational needs.

Exhaustion affects many teachers, making it difficult for them to fulfill their duties and thus harming the progress and development of students. The director of the organization plays an important role in

developing a favorable and creative climate and a sense of security and trust in the workforce. Based on the above data, the following research questions were formulated:

- 1) To what extent do special education and training teachers show symptoms of burnout?
- 2) Is there a connection between the burnout of special education teachers and the leadership model of the director of the educational unit?
- 3) Is there a difference in the degree of burnout of special education teachers in relation to their individual demographic characteristics?

METHODOLOGICAL FRAMEWORK

Quantitative research design was used to conduct this study, as the purpose of the research is to find the relationships between the variables and to interpret its results by the population under study. According to Papanastasiou and Papanastasiou (2014), through quantitative research we try in an objective way to find out exactly what is happening in the world around us, being unaffected by our personal views, values and attitudes, studying samples of the population.

In addition, according to Creswell (2016), key features of quantitative research are the formulation of the purpose and the research questions that have been asked, which have a "specific, limited, measurable and observable character" (p. 13) and the correlation of variables within from statistical analysis to interpret the results obtained after comparison with studies and research of the past. In this study, the degree of burnout of special education teachers is described, we compare the demographic characteristics between special education teachers and we investigate the existence of a correlation between the burnout of teachers and the leadership model of the director of educational organizations. The research questions that have been asked refer to measurable variables and can be satisfactorily investigated through the application of quantitative research.

SAMPLE

The selection of the research sample was carried out through specific steps that are followed during the quantitative research process (Zafeiropoulos, 2015). Specifically, the research questions asked led to the basic sampling unit which is the special education teachers working in educational units, while then the population of the research was determined, which consists of all special education teachers working in primary and secondary educational organizations in Greece. The sample of the study was determined from the research population, which was selected through selective sampling (Papanastasiou & Papanastasiou, 2014).

In particular, the individuals who were immediately available to participate in the research were selected, due to the ease of data collection in a short period of time.

The sample of the study consisted of special education teachers of primary and secondary education who serve in educational organizations of the prefectures of Attica, Voiotia, Thessaloniki, Ioannina, Cyclades, Larissa, Pieria and Rethymno while a total of 136 questions were received and evaluated.

DATA COLLECTION TOOL

The questionnaire was used as a means of data collection for this study, which is one of the most common means of easy collection of information from a large number of subjects.

The method of submitting the questionnaire was via the internet, a way that is an economical and easy-to-use option for data collection and enables subjects from different parts of the country to participate, given their access to the internet (Papanastasiou & Papanastasiou, 2014). Specifically, it was distributed to teachers via e-mail and their answers were collected and collected through the online platform "Google Forms" and the website run by the hyperlink: <https://forms.gle/iMYpiZpg6gaKhnea9>.

DESCRIPTION OF THE TOOL

The questionnaire that was distributed initially contains an introductory note to the participants. This note states the researcher's data, the purpose of the questionnaire and the importance of their

participation in the research in terms of its scientific validity and reliability. Finally, the necessary assurances are provided to ensure the anonymity of the participants. The continuation of the questionnaire consists of three more sections, which are the following: the leadership scale, the burnout scale and the demographic characteristics.

The first part of the questionnaire contains the measurement scale of the leadership style of the director of the educational unit and specifically the Multifactor Leadership Questionnaire (Form 5x) by Bass and Avolio (1995). The questionnaire has 24 statements, in which participants are asked to choose the answer that best describes the leadership model or the behavior adopted by the director of the special education unit that the teacher is working on during the current school year. The three leadership styles, which this questionnaire measures are the transformational, the transactional and the passive-avoidant leadership styles (Bass, Avolio & Atwater, 1996). The default responses to these statements are closed-ended and take the form of the Likert-type ordinal five-point scale. Participants must choose from 0 to 4 to answer how often the unit manager exhibits specific behaviors and applies specific leadership models (never, rarely, occasionally, frequently, very frequently).

The second section of the questionnaire contains the scale of measuring the burnout of employees, developed by Maslach (MBI) - Maslach & Jackson (1986), which has been translated and adapted into Greek by Kokkinos (2006). In this section there are 20 closed-ended questions about the feelings and attitudes of special education teachers, which are divided into three subscales according to the three pillars of Maslach burnout: emotional exhaustion, personal achievement and depersonalization (Kokkinos, 2006).

Questions are answered in the form of Likert-type ordinal seven-point scales. Participants must choose from 1 to 7 to answer how often they feel what the sentences express (never, sometimes a year, once a month, sometimes a month, once a week, sometimes a week, every day). Existence of burnout occurs when participants show high scores on the subscales of emotional exhaustion and depersonalization and low scores on the subscale of personal achievement (Kokkinos, 2006).

The demographic characteristics questionnaire section contains improvised questions that refer to the demographics of the subjects participating in the research. It consists of six closed-ended questions, which concern gender, age, employment status, years of service in special education and training, level of studies and the subject / specialty of the subjects. Questions related to gender, age, service status and years of service give specific answer options, which can be chosen by the participants, the question about the level of study in addition to the predefined answers it contains, enables the participant to add their own answer with one or two words while in the question for the field / specialty the subject is asked to answer with numbers and one or two words (Papanastasiou & Papanastasiou, 2014).

VALIDITY AND RELIABILITY OF THE DATA COLLECTION TOOL

The measurement of the director's leadership model was done through the Multifactor Leadership Questionnaire (Form 5x) of Bass and Avolio, as it is a data collection tool that has been widely used in research programs, postgraduate and doctoral dissertations (Barnes, Christensen and Stillman, 2013), thus validating its validity. In fact, the literature review of the broader organizational psychology has shown that transformational leadership style has more positive and lasting results in terms of efficiency, effectiveness and employee satisfaction than the transactional or passive-avoidance form of leadership (Barnes, Christensen & Stillman, 2013).

Regarding the reliability of the tool, Cronbach's alpha coefficient of internal consistency ranges between 0.60 and 0.92. Through previous studies it has been found that the tool shows stability in its results (Barnes, Christensen & Stillman, 2013).

Respectively, the Maslach burnout scale (MBI) has validated validity because it has been used internationally in a large number of burnout surveys of social work and supply professionals. According to Bakker, Demerouti, and Schaufeli (2002), the Cronbach's alpha internal consistency coefficient between 0.84 and 0.90 for emotional exhaustion, between 0.74 and 0.84 for depersonalization, and between 0.70 and 0.78 for job satisfaction.

RESEARCH METHODS

The resulting data were exported to a spreadsheet, which was used to process and analyze the results. The e-mail address of the participants is not listed anywhere, as their anonymity was maintained. Data analysis was performed using the statistical software package IBM SPSS Statistics, Version 20. Descriptive statistical analysis was performed for the analysis of demographic data, the results of which are presented in graphs. The purpose of descriptive statistics is the collection, organization and summary presentation of data in an understandable form (Lalou, Manolessou & Chalikias, 2015).

For the first research question about the degree to which the teachers of special education show symptoms of burnout, the average value (MT) was used. For the second research question on whether there is a connection between the burnout of special education teachers and the leadership model of the director of the educational unit, the correlation coefficient r was used, a statistical technique, which is widely used to find relationships between variables (Papanastasiou & Papanastasiou, 2014). Finally, for the third research question on whether there is a difference in the degree of burnout of special education teachers in relation to their individual demographic characteristics, the average value was used (Papanastasiou & Papanastasiou, 2014).

RESULTS

Regarding the first research question, it emerged that special education teachers do not show symptoms of burnout in general. Specifically, they show a moderate to low score on the subscale of emotional exhaustion and a low score on the subscale of depersonalization while presenting a high score on the subscale of personal achievement.

Table 1
Maslach Burnout Inventory (MBI)
[Maslach & Jackson (1986), translated by Kokkinos, 2006].

SCALE	LOW	MEDIUM	HIGH
Emotional exhaustion	≤ 20	21 – 30	≥ 31
Personal achievements	≥ 42	41-36	≤ 35
Depersonalization	≤ 5	6 – 10	≥ 11

Regarding the second research question, the analysis of the data showed that the burnout of educators is positively correlated with leadership practices that apply indifferent and critical attitudes and behaviors to other employees since the coefficient r , takes values from $0 < r < 1$. More specifically, both the thorough control and the strict supervision of the principal towards the teachers during the educational activities, as well as his indifferent attitude, lead to the professional exhaustion of his subordinates.

Finally, with regard to the third research question, it appears that there is no significant difference in burnout rates between the two genders. Teachers in the age group of 22-30 have low rates of emotional exhaustion but higher rates of depersonalization as opposed to older teachers. Substitute and part-time teachers are at higher levels of emotional exhaustion than full-time teachers. Higher depersonalization rates are presented by full-time and part-time teachers, with the latter showing high levels of satisfaction with their professional achievements. Teachers with 1-10 and 31 and over years of work experience in special education, recorded high rates of depersonalization, with the latter having high levels of satisfaction with their professional achievements. Finally, holders of postgraduate degrees show higher levels of depersonalization than holders of the basic degree.

Table 2
Differentiation of the degree of burnout of special education teachers based on gender.

GENDER		25.	26.	27.	28.	29.	30.	31.	32.	33.	34.	35.	36.	37.	38.	39.	40.	41.	42.	43.	44.	
Male	A.M.	3,61	3,23	3,10	3,29	2,77	3,87	2,77	2,68	2,55	5,13	5,10	5,48	5,08	5,06	5,45	5,13	2,26	2,61	2,61	1,94	
	N	31,00	31,00	31,00	31,00	31,00	31,00	31,00	31,00	31,00	31,00	31,00	31,00	31,00	31,00	31,00	31,00	31,00	31,00	31,00	31,00	31,00
	S.D.	1,94	2,19	2,10	2,05	1,86	1,86	1,96	1,85	1,77	1,41	1,33	1,12	1,59	1,09	1,21	1,41	1,67	1,69	1,75	1,46	
Female	A.M.	4,14	3,65	2,87	3,38	2,87	4,47	2,91	3,10	2,61	5,48	5,26	5,79	5,03	5,35	5,14	5,47	2,04	2,38	2,14	1,71	
	N	105,00	105,00	105,00	105,00	105,00	105,00	105,00	105,00	105,00	105,00	105,00	105,00	105,00	105,00	105,00	105,00	105,00	105,00	105,00	105,00	105,00
	S.D.	1,66	1,86	1,68	1,89	1,78	1,77	1,78	1,94	1,75	1,14	1,10	1,06	1,41	1,14	1,33	1,24	1,49	1,64	1,47	1,29	

Table 3
Differentiation of the degree of burnout of special education teachers based on age.

AGE		25.	26.	27.	28.	29.	30.	31.	32.	33.	34.	35.	36.	37.	38.	39.	40.	41.	42.	43.	44.	
22-30	A.M.	3,91	3,70	2,73	3,52	2,94	4,39	2,97	3,15	2,87	5,39	5,18	5,70	4,97	5,45	5,27	5,58	2,30	3,24	2,94	2,18	
	N	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33
	S.D.	1,91	2,09	1,92	2,15	1,95	1,95	2,08	2,08	1,99	1,34	1,28	1,08	1,81	1,18	1,38	1,32	2,01	2,09	2,14	1,78	
31-40	A.M.	4,11	3,75	3,11	3,4	2,79	4,04	2,82	2,96	2,88	5,44	5,25	5,72	4,91	5,14	5,19	5,25	2,18	2,26	2,04	1,79	
	N	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	
	S.D.	1,71	1,93	1,75	1,98	1,79	1,78	1,71	1,87	1,82	1,24	1,17	1,11	1,3	1,2	1,44	1,24	1,44	1,48	1,38	1,39	
41-50	A.M.	4,27	3,23	2,59	3,27	3,23	4,84	3,09	3,05	2,95	5,41	5,14	5,82	5,45	5,32	5,23	5,59	2,05	2,45	2	1,27	
	N	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	
	S.D.	1,55	1,88	1,71	1,7	1,82	1,82	1,93	1,98	1,85	1,22	1,08	1,05	1,37	0,99	1,15	1,4	1,88	1,71	0,98	0,55	
51 +	A.M.	3,75	3,08	3,04	3,13	2,5	4,87	2,71	2,88	2,33	5,29	5,29	5,58	5,04	5,38	5,17	5,29	1,58	1,71	2,04	1,58	
	N	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	
	S.D.	1,78	1,95	1,78	1,78	1,53	1,81	1,85	1,87	1,27	0,95	1,08	1,1	1,3	1,08	1,05	1,23	0,88	0,89	1,18	0,72	

Table 4
Differentiation of the degree of burnout of special education teachers based on service status.

Official status		25.	26.	27.	28.	29.	30.	31.	32.	33.	34.	35.	36.	37.	38.	39.	40.	41.	42.	43.	44.	
Subsidi- ary teacher	A.M.	3,92	3,59	2,8	3,36	3,7	4,81	3,76	3,84	3,51	5,57	5,38	5,77	5,05	5,35	5,38	5,45	2,35	3,52	3,3	1,85	
	N	79	79	79	79	79	79	79	79	79	79	79	79	79	79	79	79	79	79	79	79	79
	S.D.	1,8	1,95	1,79	1,98	1,79	1,8	1,81	1,9	1,85	1,3	1,57	1,69	1,5	1,36	1,65	1,38	1,68	1,76	1,61	1,63	
Full time teacher	A.M.	4,34	3,82	3	3,98	3,9	4,76	3,58	3,38	3,62	5,69	5,38	5,98	4,9	5,38	5,34	5,3	1,88	3,2	3,84	1,5	
	N	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	
	S.D.	1,64	1,98	1,63	1,85	1,69	1,68	1,7	1,88	1,88	0,98	1,07	1,35	0,95	1,05	1,05	1,35	1,34	1,34	1,21	0,84	
Part time teacher	A.M.	4,39	4	3,71	4,34	4,34	4,85	4	3,71	4,88	5,57	4	4,34	5,45	5,35	4,34	5,57	2,85	3,34	3,34	2,71	
	N	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	
	S.D.	1,8	2,08	1,63	1,88	1,89	1,84	1,53	1,85	1,9	1,63	1,85	1,67	1,81	1,85	1,67	1,87	1,87	1,87	1,87	1,54	1,36

CONCLUSIONS

Regarding the existence of burnout syndrome in special education teachers, it was found that they do not show symptoms of burnout, because they scored moderately to low in the sub-scale of emotional exhaustion, low score in the sub-scale of depersonalization and high grades in the staff. The specific results contradict the results of the research of Kokkinos and Davazoglou (as mentioned in Chazipemos, 2016), conducted on teachers in Eastern Macedonia and Thrace, through which it was found that special education teachers have higher levels of emotional exhaustion and depersonalization but also personal achievement by general education teachers. In contrast, they also come with the results of the research of Antoniou and Ntalla (2010), in which it appeared that special education teachers show high levels of distancing from their students but also resigning from their duties, due to lack of necessary financial resources related to the maintenance of school infrastructure, their increased workload, increased responsibilities for achieving their teaching goals and discrimination against them compared to their colleagues in general education (Antoniou & Ntalla, 2010).

The results of the present research are in line with the results of the Gerokosta (2016) research, which states that special education teachers are very satisfied with the nature of their work, the way their principals manage, the relationship with colleagues and their students, as well as very satisfied with his working conditions and showed higher values in professional satisfaction than their colleagues in general.

Regarding the connection between the burnout of special education teachers and the leadership model of the director of the educational unit, it emerged that the burnout of training teachers is associated with leadership practices that apply indifferent and critical attitudes and behaviors to other employees, as well as Thorough control as well as the strict supervision of the principal towards the teachers during the educational activities as well as his indifferent attitude, leads to the professional exhaustion of his subordinates.

The results of the research are in line with the results of the research of Kollitiri (2018), which states that the leader who strictly implements government decisions limits the initiative and creativity of teachers by causing them negative emotions that lead to burnout. Similar results were led by the research of Kosta and Anastasiou (2020), which demonstrated the dominant position of the principal in relation to the exacerbation of various factors that are responsible for the burnout of teachers and are related to their work environment, such as stress, resulting from requirements and workload and the application of strict regulations.

Finally, regarding the existence of differentiation of the degree of burnout of special education teachers in relation to their individual demographic characteristics, the research showed that there is no significant difference in burnout rates between the two genders, thus agreeing with surveys that showed that there is a difference in the levels of burnout in relation to gender (Kahn et al, 2006).

Research has also shown that teachers in the age group of 22-30 have lower rates of emotional exhaustion but higher rates of depersonalization than older teachers. These results appear to differ in some aspects of burnout compared to previous research showing that younger teachers often feel inadequate (Carton & Fruchart, 2013) and frustrated with professional reality, which goes against expectations and the standards they had before joining the professional arena (Carton & Fruchart, 2013).

RESEARCH LIMITATIONS – SUGGESTIONS FOR FUTURE RESEARCH

There were some limitations in conducting this research that are worth mentioning. Initially, the sample of participants came only from the prefectures of Attica, Voiotia, Thessaloniki, Ioannina, Cyclades, Larissa, Pieria and Rethymno and amounted to 136 special education teachers of primary and secondary education. Thus, the results of the research cannot be generalized and represent the total population of special education teachers working throughout Greece, except to offer useful conclusions for the subject under study.

Future research could investigate the effect of the leadership model of the director of the educational organization on the burnout of special education teachers, using a larger sample of teachers, which will be extended to more prefectures of the country. Also, future research could focus on special education teachers of a specific grade only, either primary or secondary.

An additional limitation that should be mentioned is that the data collection tool was shared via the internet with the result that there was not much response and participation of the recipients in the research, but also possible hesitation of the participants regarding the expression of questions and seeking clarifications. In possible future surveys, researchers could provide the questionnaire manually, making it easier and more immediate to provide instructions for completing the questionnaire.

Finally, the burnout syndrome of teachers is multifaceted and multidimensional and in the present study the effect of the leadership model on its appearance in special education teachers was investigated. Future research could look at other possible factors that could lead to the syndrome, such as teachers' relationship with students' parents and guardians or the educational policy of applying the principles of special education in the country's schools.

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THE VIEWS OF HEADTEACHERS OF SECONDARY EDUCATION SCHOOLS IN WEST THESSALONIKI ABOUT ADMINISTRATION FUNCTIONS IN EDUCATION.

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ABSTRACT

There is not a commonly accepted definition for administration and that is why we mention as an example that administration is: «the coordination of people and activities to achieve common goals» (Κουτούζης, 1999:35) and it covers all the activities of an organization (Σαΐτης, 2008: 132). Researchers of administrative science spent a lot of time on the issue of administration in education and whether administration principles can be applied in it. This is because the purpose of education as it is defined in article 16 of the written Constitution says that education «aims at a moral, intellectual, professional and physical education of Greeks».

These goals can be achieved by a school administration which is based on scientific principles. It can considerably increase the performance and efficiency of factors engaged in the educational process like human resources (teachers, students), logistic infrastructure (buildings, laboratories etc.), funding, parents, the local community, etc. (Κατσαρός, 2008: 16. Μάρδας & Βαλκάνος, 2002). This is, also, stressed in definitions about administration in education. Thus, according to Katsaros (2008: 16), administration in education is: «the specialized human activity which takes place in all kinds of educational organizations or the entire education system and aims at the actualization of education purposes, through functions, with the exploitation of available resources -human or material».

Administration is carried out by the headteacher, the deputy headteachers and the board of teachers. The headteacher has the main role as according to the law 1566/85, article 11, they are responsible for «the smooth operation of the school, the coordination of school life, the obedience to the law, bulletins and service commands as well as the application of the decisions of the board of teachers». The law 4823/3-8-2021 (GG 136, i. A) increases the headteacher's responsibilities.

The headteacher has to live up to the expectations of their role as a leader of a modern and effective school (Σαΐτης, 2002), since they continually interact with the members of the school community and they coordinate them, in order for the school to be able to adjust to the changing conditions of society (Θεοφιλίδης, 2012). Modern school administration requires the headteacher to have administration knowledge, human resources management skills, leadership skills and mainly social and communication skills.

The functions of school administration are the same as the basic principles of general administration and there are some functions which are related specifically to education (Κατσαρός, 2008: 16). The main functions of school administration are: 1. planning, 2. organization, 3. direction-

leadership, 4. control (Μπουραντάς, 2002), 5. coordination, 6. crisis management, 7. human resources management, 8. creation of a good climate, 9 interaction between parents and school, 10. building visions, 11. forming culture, 12. communication.

A quantitative approach and the method of survey were applied in order to carry out the research. Survey is a preferable method for the exploration of attitudes, views and stances (Δημητρόπουλος, 2004). It collects a lot of information and it gives the researcher the opportunity to describe a situation and find the constants for comparisons and associations (Bell, 2001).

A 58,3% of the headteachers of secondary education schools in West Thessaloniki view organization and human resources management as the most important administration functions and 41,7% of them view planning as the most important one. They think that participation of the board of teachers is important in almost all school functions, mostly in planning and vision building (83,3% and 75% respectively). The function which is the headteachers' exclusive responsibility is direction-leadership (50%). As for the studies in administration in education, 75%, of the headteachers think that they contribute considerably to their work .

Key Words: administration in education, headteacher, administration functions.

PURPOSE

The aim of the present research is to explore the views of headteachers of secondary education schools in West Thessaloniki about the need of administration functions in the efficiency of their work.

The research questions are:

1. Which school administration functions do headteachers of secondary education schools in West Thessaloniki consider the most important and why?
2. In which school administration functions is the participation of the board of teachers necessary according to headteachers of secondary education schools in West Thessaloniki?

The research hypotheses that are mentioned in the research questions are:

- Headteachers of schools know about school administration.
- They cooperate with the board of teachers in administration.

The individual aims of this research are:

- the written account of the headteachers' studies and educational training in West Thessaloniki in relation to the level of their knowledge and their skills.
- the written account of statistical and demographic data of the headteachers.

RESEARCH METHODS

A qualitative approach and the method of survey were applied in order to carry out the research. Survey is a preferable method for empirical research for the exploration of attitudes, views and stances (Δημητρόπουλος, 2004). It gives the researcher the ability to describe a situation and find the constants for comparisons and associations among specific data (Bell, 2001).

The questionnaire which was created for the collection of data includes questions that are developed in two (2) groups based on the aims and the research questions of this paper. The aim of the research and the selection of the method were determined before the creation of the questionnaire (Παρασκευόπουλος, 1999). The questionnaire was used as it ensures anonymity and gives the respondents the opportunity to complete it whenever they decide to do so without feeling pressured by the physical presence of the researcher (Βάμβουκας, 1999). Additionally, the questionnaire is a tested research tool which gives the ability to collect a lot of data in a short period of time (Παρασκευόπουλος, 1993).

The questionnaire was accompanied by a letter to headteachers of school units of Secondary Education in West Thessaloniki where they could find information about the aim of the research and the use of the answers exclusively for the research (Ανδρεαδάκης 2005). Before sending it there was a pilot survey with the participation of six headteachers in order to check the clarity and structure of the questions. Its completion was timed and it was found out that it took about four minutes. After some observations and suggestions, the questionnaire took its final form with comprehensible questions.

After that, it was posted on google form, which gives the ability to create spreadsheets and diagrams with the answers as most surveys are carried out with the use of the internet (Solomon, 2001).

The questionnaire is divided into two (2) groups and it includes twenty (20) questions; nineteen (19) of them are close-ended and one (1) open-ended, divided into three categories. There are dichotomous questions (YES-NO), Likert scale questions with five possible answers (unsatisfied (1), slightly unsatisfied (2), moderately unsatisfied (3), very satisfied (4), extremely satisfied (5) (Μαράκης, 1999) and multiple-choice questions. The Likert scale gives a clear answer rating in relation to the quantity. There was a range from the negative to the positive answer. Another characteristic of the survey was the fact that it offered the opportunity to give multiple answers to questions which had many suggested options. Despite the fact that open-ended questions are not easily decoded and processed, there was one in the survey in order for the respondents to be able to explain their answers better and give more information about their choices. Furthermore, in the multiple-choice questions the respondents could suggest an answer of their own if they couldn't find one that they liked in the suggested options.

The close-ended questions ensure anonymity, can be easily answered as the only thing that the respondents have to do is to choose their answer and this facilitates their process through statistical analysis (Λέτσιος, 2017). According to Γαλάνης (2012), the Likert scales are psychometric scales which are used in questionnaires to explore if the respondents agree or not with a specific suggestion.

Time frame

The planning of the research took place in the middle of September 2021. Before that, there was a review of the relevant bibliography and the research method to be applied was decided. The collection of data took place between 4-10 October 2021, with the method of survey and the questionnaire as a research tool. The program which was used after the collection of the data was the S.P.S.S (21.0) (Superior Performance Software System) in order to register it in a database (Ταρατόρη-Τσαλκατίδου, 1995). Descriptive statistics was applied in order to verify the frequency of the answers on each Likert scale as well as deductive statistics to explore if there were differences in the average answers between different sample groups. Finally, in the middle of November 2021 there were the conclusions and suggestions.

Research sample

The questionnaire was posted on the internet on Google form and the link was shared via email, as the use of the internet when it comes to collection of data is easy and economical (Bell, 1997), with the headteachers of (150) public schools of Secondary Education in West Thessaloniki, with the request to be completed. From a total of 150 headteachers, with whom the questionnaire was shared, 84 responded and as much as 56% is considered to be satisfactory in such surveys.

The specific method was chosen because it is considered to be suitable for the exploration of educators' views and stances and it is appropriate for the collection of primary information. The anonymity in the teacher community and, as a consequence, impartiality were ensured with the online completion of the questionnaire and with the insightful and easy to understand questions (Cohen, L., Manion, L., & Morrison, K., 2003). The questionnaire in a research is a tool which is appropriate for easily processed and comparable processes in the future (Bell, 2001. Κυριαζή, 1999). Additionally, this method makes it possible for many people to take part simultaneously without extra cost or time needed and the physical presence of the researcher is not necessary (Παρασκευόπουλος, 1993). The questions were simple and easy to understand accompanied by clear instructions, they were not emotionally charged so as not to put the respondents in a difficult position and elicit specific answers (Βαμβούκας, 1993: 257. Κελπανίδης, 1999: 53).

The questionnaire was divided into two (2) parts. The first part included the questions (1.1-1.12) which were about: gender, specialty, years of work experience as well as experience in administrative positions, type and area of the school unit, studies and headteachers' skills. The second part included the questions (2.1-2.12) which were about administration functions. There was also an open-ended question in order for the respondents to explain which administration function they consider the most important.

The process of data was done using mathematical statistical models giving valid and reliable results. Furthermore, the variants as for the association among questions were checked with cross-tabulation tables. The analysis of the cross-tabulation tables or contingency tables was done with the method of χ^2

which is generally used to assess if two or more samples, which consist of frequency data (nominal data) differ greatly from each other.

RESULTS AND DISCUSSION

The researchers of administration science were involved in finding out about administration in education. The purpose of education is defined in article 16 of the written Constitution (1975 and in the reviewed one of 1986) and says that education «aims at a moral, intellectual, professional and physical education of Greeks». The special purpose of secondary education is mentioned in the law 1566/85 (Gazette 167/ i. A' /30-09-1985) article 1 and says that «The purpose of primary and secondary education is to contribute to the whole, harmonic and balanced development of students' intellectual and psychosomatic strengths so that regardless of their gender and origin they can be whole personalities and live creatively».

These goals can be achieved by a school administration which is based on scientific principles. It can considerably increase the performance and efficiency of factors engaged in the educational process like human resources (teachers, students), logistic infrastructure (buildings, laboratories etc.), funding, parents, the local community, etc. (Κατσαρός, 2008: 16).

This is, also, stressed in definitions about administration in education. Thus, according to Katsaros (2008: 16), administration in education is: «the specialized human activity which takes place in all kinds of educational organizations or the entire education system and aims at the actualization of education purposes, through functions like planning, organization, direction, coordination and control, with the exploitation of available resources -human or material». Saitis (2000: 24) mentions administration in education as: «actions that have to do with the rational use of available resources - human and material- for the actualization of the goals set by different types of educational institutions». Bush (1986: 3-4) sees it as «the coordination process of resources -human, material and technical- for providing education in an effective way».

Leadership in school, also, plays an important role despite the fact that the Greek educational system doesn't leave much to the headteacher-leader. Leadership in school is divided into: a) vision b) influence c) values (Bush & Glover, 2003). The leader's vision is embraced by all the members of the school community so that there is commitment to the common effort (Beare, Caldwell & Millikan, 1989). The leader's influence can be stronger through the relationships (Yuki, 2002) in the school community and the motivation of the teachers to change behaviour. The leader's values can bring together members of a group like that of a school community (Wasserberg, 1999: 158).

Since the needs of the community keep changing, the needs of schools also change and they need modern models of leadership to keep up with the changes (Θεοφιλίδης, 2012). As for the present research, there was a statistical analysis of the stances of (84) headteachers of secondary education in West Thessaloniki in order to explore their views about administration functions and their contribution to their administrative work. The response of headteachers of all types of schools and from different areas (urban, rural) of West Thessaloniki was great. From the analysis of the findings there are some ascertainments which help us reach conclusions about the views and stances of the headteachers of secondary education in West Thessaloniki.

From the headteachers who took part in the survey, 67.8% are men and 32.2% women. This finding shows that the positions of headteachers are mostly occupied by men and agrees with other surveys, such as that of Klironomou 72.73% (2018), that of Argiriou 70.6 % (2008), that of Dimitropoulou 68% (2015), and that of the Pedagogical Institute (2010) with 59% men all over Greece and 67.6% men in Central Macedonia. The fact that fewer women occupy administrative positions in education can be found in educational systems of other countries as well (Δαράκη, 2007. Σαΐτη & Σαΐτης, 2012b). Eighty six point eight five per cent of the headteachers have worked in education for more than 21 years. This percentage is a little higher than that of 80.6% in the survey in Central Macedonia carried out by the Pedagogical Institute (2010). As for experience in administration positions, 41.7% have work experience of more than (9) years. Thirty two point five per cent of them have work experience of 5-8 years. The percentage of those who have work experience of 1-4 years increased (25.8%) in comparison with our survey in January 2020. This can be explained by the recent retirement of a lot of headteachers and their substitution by deputy headteachers with few years of experience. Seventy nine point one per cent of them have furthered their studies. Sixty seven point five per cent of them have at

least one postgraduate degree and 13.1% at least one doctorate. This is considered a high percentage compared to the one of Etoloakarnania. There, 44.32% have a postgraduate degree and 4% have a doctorate (Klironomos, 2018). The percentage is also higher than the one in the survey of the Pedagogical Institute in Central Macedonia (2010). In that survey, 17.3% have a postgraduate degree and 5.3% a doctorate. Eighty one point one per cent of the headteachers have a certificate in foreign language level B2 and above, increased compared to our survey in 2020 and even more increased compared to the 27.1% in the survey of the Pedagogical Institute (2010). Also, 97% have a certificate in Information and Communication Technologies. They believe that undergraduate studies haven't helped them in administration issues at all (24.5%). Thirty one point one per cent of the headteachers have postgraduate degrees in administration and 84.56% have attended courses in it.

In the multiple choice questions, the headteachers of secondary education schools in West Thessaloniki answered that they consider organization and human resources management as the most important administration functions (58.3%), following planning (41.7%), management-leadership and coordination (33.3%), vision (25%), positive working environment and communication (16.7%) and the other functions (8.3%).

In the question about their first choice of the most important administration function they say: Organisation helps run schools better, it leads to good performance of what has to be done without arguments since everyone knows what they have to do.

As for human resources management, they believe that since humans are responsible for efficiency, people in administration posts have to do their best in order for the employee to perform better. If the employee can perform 100% then the school will function better. Also, prevention or good conflict management have positive influence on the employees and the operation of school.

As they stress, planning is of great importance in school administration because everyone knows what will happen at school during the school year.

The function of management-leadership is important since the headteacher inspires, motivates and encourages all the members of the school community to work for a common goal.

Coordination contributes to the smooth operation of the school.

As for the creation of a vision they state that administrators have to create a common vision, they have to inspire, motivate, encourage all the members of the school community and it gives preparation time for the achievement of long-term goals.

Communication is the most important function because if the headteacher gets the message across then misunderstandings and problems in other functions can be avoided.

As for the creation of a pleasant working environment they say that it is an important function as good interpersonal relationships ensure working conditions with cooperation, respect, diffusion of ideas and good practices resulting in the headteachers' professional development and the achievement of the learning goals.

In the multiple choice questions about the participation of the board of teachers in administration functions, they believe that in almost all of them cooperation is important and mostly planning and vision creation (83.3% and 75% respectively). Next is culture formation with 66.7%, organization and coordination with 58.3%, good working environment and the rapport between the school and parents with 50%. After those, there is crisis management and communication with 41%, control and human resources management with 16.7% and 8.3% respectively. They think that teachers shouldn't be involved in the direction-leadership function.

In the question about which function headteachers prefer to be their exclusive responsibility, they mention direction-leadership (50%), control and human resources management each with 25%. We can see that there is agreement with the answers of the headteachers of secondary education schools in West Thessaloniki in the previous question concerning the participation of the board of teachers in administration functions.

IMPLICATIONS

Based on the findings of the research it is suggested that:

1. There should be encouragement of educators by the Ministry of Education to continue postgraduate studies in administration of school units. Such studies should offer more credits in the choice of headteachers of schools than other studies do.
2. The state should help headteachers providing continuing education programmes in school administration at a fast pace because needs change following the sociocultural changes of society.
3. University schools for educators should offer them courses about organization and administration in education during their undergraduate studies so that they will know more about the operation of a school and the role of the headteacher.

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STEM

CREATING EDUCATIONAL "SOFTWARE" – GAMES THROUGH WIX

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ABSTRACT

Computer Assisted Language Learning is a modern scientific discipline which has gained an active role in language teaching and has generated ideas for its complete incorporation in it (Crystal, 2001). Wix is a platform that provides the ability to build websites, which can be transformed into innovative educational "software" through a user-friendly digital environment. Some of the innovative and unlimited possibilities offered by Wix are presented through two games – software, which were made and addressed to heterolingual students with the aim of teaching Greek as a second foreign language.

Key Words: educational digital games, teaching Greek as a second foreign language.

INTRODUCTION

This paper presents two digital educational games for teaching Greek as a foreign language using the Wix digital platform. Two digital games were made for students at B2 and A1-A2 language levels (DIFFICULT MISSION: ACTIVE - PASSIVE PENSION and LEARNING GREEK: FURNITURE - VEGETABLES - CLOTHES). For these specific digital games, the CALL (Computer Assisted Language Learning) method was used, which combines new technologies with the acquisition of a second foreign language. The capabilities of the digital platform allow the teacher to develop and adapt them to the level of his class. The digital games were given for testing and evaluation to a Greek teacher. The evaluation explored the possibility of utilizing the digital game in a Greek school abroad, the benefits for the students, and suggestions for its further development. The quality assessment that was made is considered overall positive, given the limitations and obstacles that arose.

PURPOSE

DIGITAL GAMES IN EDUCATION

Digital games are gradually being integrated into teaching practice in education. The prevailing perception is that their introduction will be positive for both students and teachers because they already have an important place in the lives of children. The pedagogical use of digital technology in a playful way motivates the student (Prensky, 2003) to maintain his/her interest in learning, as education is characterized as boring. When motivation is lost, learning stops. That's why teachers need to be able to mobilize their students.

Digital games stimulate the interest and curiosity of users through a pleasant process (Malone et al., 1987; Myroni et al., 2014). In addition, it is important that through the digital game, the student experiments, makes mistakes, and in this way learns without being punished. The student gets feedback and strengthens his/her self-awareness when he/she wins and achieves the goals of the game. Also, the game is approached not in its violent form, but as a way to achieve the goal of learning, which is not to treat the student as a repository of knowledge, but rather the knowledge of self-education.

In recent years the school, the teacher and education in general have been questioned and criticized for its effectiveness. In addition, there is criticism about the fact that the teacher ignores the new learning environments and the methods of their use and chooses an unattractive, traditional way of teaching (Katsimardos, 2011). The school does not change and does not understand that today's students have changed. Most researchers argue that modern generations of students have grown up with technology and think differently than previous generations (Prensky, 2005). In other words, the pedagogical methods that were effective for previous generations are not effective for modern generations. Therefore, it is necessary for education to change in order to approach the modern student and to satisfy in a modern and effective way the needs of each generation (Katsimardos, 2011).

TECHNOLOGY AND TEACHING A SECOND FOREIGN LANGUAGE

The use of new technologies in the classroom and in the educational process can bring positive results in different subjects. Especially in the teaching of the second foreign language, technology is very attractive and efficient. According to research on the theory of acquiring a second foreign language, language is "dynamic" and its learning is considered to be "The acquisition of the ability to construct the communicative concept into a new systemic concept". Learning a second foreign language is a demanding process and can be difficult to teach. Therefore, with the "help" of new technologies, an environment is created where students can work to acquire this ability (Chapelle, 2009). The CALL method also helps with this, as it combines the use of new technologies with the acquisition of a second foreign language. This method is a tempting teaching intervention because it differs from the traditional way of teaching that is related to the completion of a booklet or, in its most advanced form, to the screening of a film. Students with CALL engage in an interactive discussion in the target language, which is very important for learning it.

The integration of sound, voice interaction, text, video, and animation creates an interactive and experiential learning and promises to enhance the model of learning a second foreign language in the classroom (Ehsani & Knodt, 1998). More specifically, CALL technologies can support experiential learning in a variety of ways, provide effective feedback to students, enable teamwork, promote exploratory and global learning, enhance student achievement, and access authentic materials. In addition, through the use of CALL technologies, teaching is individualized, does not depend on a single source of information, and motivates students (Egbert, et al., 2002).

Computers allow the user to do tasks that cannot be done in other ways, such as providing feedback on certain exercises. In the CALL method, activities involve the transfer of information from one medium to another, from one student to another, or from one group to another. In the specific scenario presented, the student or a group of students participating in the activity can pass on to their members the information they have learned through the experiential process.

Computers offer students a variety of activities to develop different language skills. They can motivate skills and activities, especially in the field of listening. In the proposed teaching scenario, in a simple listening comprehension activity, the computer can let the student listen to the relevant part of the text again. Such activities not only enhance listening and writing skills, but also more actively assess students' comprehension skills.

The main advantages of CALL are that learning is done in a more enjoyable and attractive way. This has the effect of enhancing students' self-confidence as the quality of time they are exposed to the foreign language increases, because students use the foreign language to learn the subject, in this case passive pension (Coyle, 2006). For the teacher the method is equally attractive, because there are no commitments and he / she can make adjustments to the data of his / her class every time.

THE DIGITAL GAME IN TEACHING A FOREIGN LANGUAGE

Any teaching medium that uses computers (computer-based learning) is electronic learning (e-learning) and requires a combination of digital media and learning. E-learning methods include educational games, which are not only aimed at being fun, but also have a specific and predetermined pedagogical purpose. This purpose is the transmission of knowledge and skills (Breuer & Bente, 2010; Michael & Chen, 2006; Prensky, 2001). In digital game-based learning, the game is used for pedagogical purposes (Tang, 2009).

The objectives of each activity are set by the teacher, and the feedback is immediate. There is no ranking or final score, but a simple reward that makes the assessment more attractive and pedagogical. Through the process of trial and error, in an environment where the error does not stigmatize but gives feedback, students finally learn the correct answer (Tzimogiannis, 2019). During the game, they are rewarded and feel proud of their achievements. Rewarding through feedback has a positive effect on the human brain and creates a sense of pleasure and commitment (Werbach & Hunter, 2012).

Digital games are primarily for asynchronous learning, but they can also be turned into an online competitive game. In addition to the game, there is music, which modernizes the traditional method of teaching. Activities can also be done through mobile devices, asynchronously, in the space and time of students, and with an unlimited number of repetitions. Digital games combine image and sound and can be used for grammar as well as syntax.

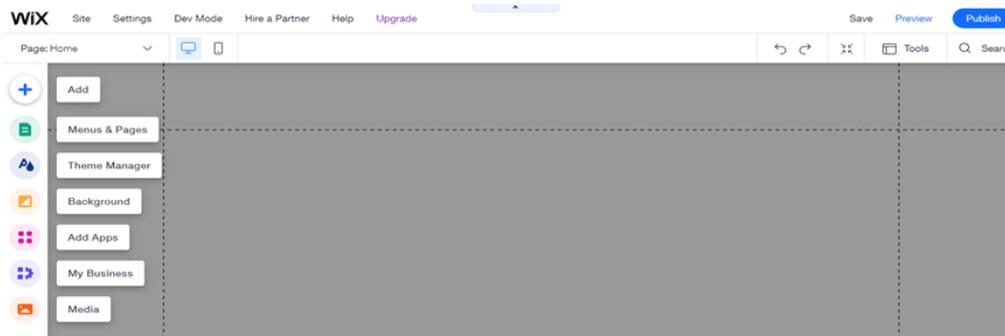
RESEARCH METHODS

DEVELOPING EDUCATIONAL GAMES THROUGH WIX

Creating educational games - websites through Wix requires a free registration (<https://wix.com/>). Next, there are some steps. In each prompt for theme and template selection, the "other" option is suggested. Essentially, a website will be educational "software". Wix Editor can offer this feature in a user-friendly environment. Creating "software" instead of a conventional website requires working in a blank space and not on a default website (template). It's very important that the user interface in Wix Editor is quite simple and offers an experience similar to Microsoft Powerpoint. On the left are the action keys (the "menu"), from where it is possible to edit the empty space. At the top right of the screen, there are three important keys that allow you (in order) to save, preview, and publish the site. The dashed lines create the space in which objects (images, keys, texts, etc.) are allowed to be placed.

It is suggested that search engines do not find the game - "software" and that only those who have the link can enter. This will protect students from malicious users (Menus & Pages> SEO Basics> Let search engines index this page). The above procedure is repeated for each page.

Figure 1
The Wix Editor



The user starts in a blank space, which is the first page (and home page) of the site. More pages can be added via the second button on the left (Menus & Pages> Add> Blank Page). It is important, after each change, to save ("Save" on the top right) or to publish ("Publish") the changes. Of course, oftentimes Wix automatically saves the changes that are made. So, if there is a sudden disconnection, the editing of the webpage usually continues from where it left off. Also, the platform keeps a record of any temporary storage or publication of the website, and in case of error, it is possible to restore it to its previous state (Restore).

The first step in making educational games is choosing a background image. Selecting and adding images is quite important in a game. (Image> My Uploads> My Image Uploads> Upload Media).

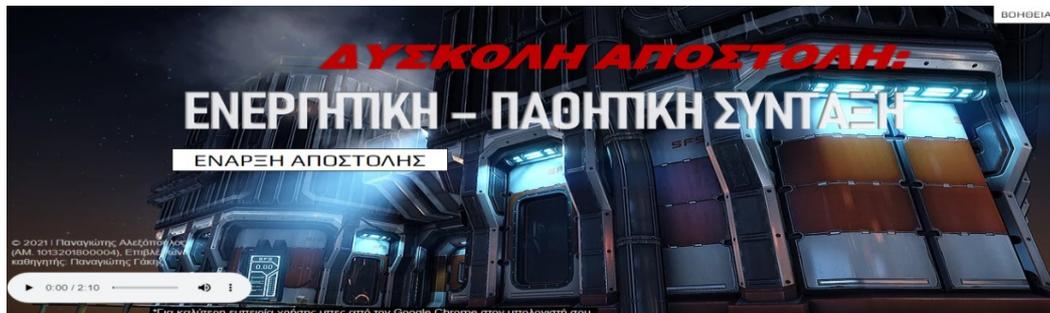
The great advantage of Wix, which makes it quite similar to Microsoft Power Point, is the ability to place and move images and text freely. This possibility, with the help of imagination, can lead to innovative paths, such as those that will be presented below.

EDUCATIONAL GAME: "DIFFICULT MISSION: ACTIVE - PASSIVE PENSION"

Some of the almost unlimited possibilities of Wix are revealed in the game "DIFFICULT MISSION: ACTIVE - PASSIVE PENSION", which aims to help foreign language students to distinguish active and passive syntax in the Greek language. In order to make this game, some images had to be designed outside of the Wix environment, while others came from the internet. The game utilizes digital storytelling to introduce students to the syntactic rules through an interactive story. The student acquires the role of agent and needs to interrogate two spies, each of whom works for a secret service, ENE.SY. (active pension) and PATHI.SY. (passive pension).

The game begins, and an agent asks the students to read the statutes of each organization (which is actually the syntax) and then interrogate the two arrested. At the top left of the screen, there is a "HELP" button with the basic vocabulary that students need to know. Students have the opportunity at any time, throughout the game, to refer to the basic vocabulary. For each setting, a corresponding page has been created (from Menus & Pages) and the transitions are achieved through buttons. In some cases, the transitions are made by clicking on a transparent image, which gives the student-players the impression that they are moving from one page to another through various parts of the background (for example, through a door). All graphics are inserted into the page as images (.JPG).

Figure 2
The home page



At the bottom left, there is a music box. Wix does not offer exactly this feature, but the user-educator can write HTML code (Add> Embed> Costum Embeds> Embed a Widget> Enter Code). What the characters in the game say is accompanied by their sound performance, which gives students the opportunity to hear the Greek language as they read it. In some cases, the voices become funny, and in this way, the students have fun and learn at the same time.

Figure 3
The interrogation



Each agent tells the player a phrase that shows the organization he works for. In case the student makes a mistake, the correct answer is not revealed to him/her, but he/she can try again and re-read the rules

(the statute of each organization). After the student answers both questions correctly, the game is over. The student-player is rewarded and given the promise of a new mission. The game is available at: <https://pan-alexopoulos.wixsite.com/thegame/>.

EDUCATIONAL GAME: "LEARNING GREEK: FURNITURE - VEGETABLES - CLOTHES"

The game "LEARNING GREEK: FURNITURE - VEGETABLES - CLOTHES" also offers an interactive educational experience. In this game, the foreign language students put some words in the correct category. The game is aimed at beginners (level A1) and offers the ability to move objects freely. The game was made using Wix, and the colorful rectangular shapes in which the words were placed and then saved as images (.jpg) had to be designed in a different program, in order to enter the website-game.

Figure 4
LEARNING GREEK: FURNITURE - VEGETABLES – CLOTHES

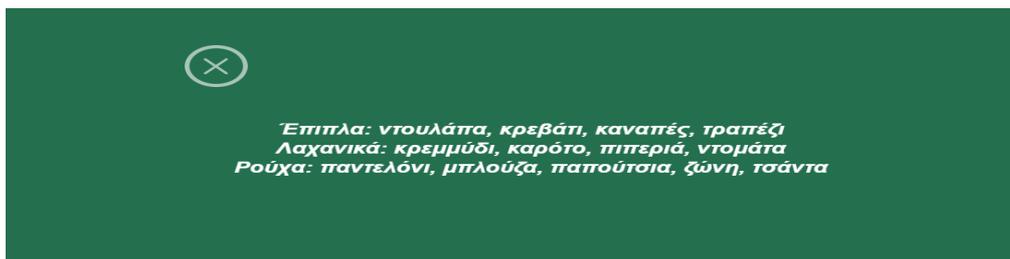


This game needs only one page, which is the main page (homepage). The ability to move photos freely offered by Wix was used here for pedagogical purposes. Added to the game website a "freestyle gallery" (Add> Gallery> Freestyle). Then the rectangular shapes with the words (.jpg) were added. In this game, it is possible not only to move the shapes freely, but also to change their size and rotate them. This makes the game even more fun. Intense colors were chosen, in order to create an attractive user interface.

With the game "LEARNING GREEK: FURNITURE - VEGETABLES - CLOTHES", the student's self-action is encouraged through his self-assessment. In particular, once the student has placed the words in each column, he or she can check his or her progress and go back to correct any mistakes. The repetition of this process aims at the empirical learning of the words that have been chosen. At the bottom of the page is the button "See the solution" (Add> Button). However, the revelation of the answer does not end the game, as it gives the opportunity to return and correct mistakes.

A "Lightbox" (Menus & Pages> Lightboxes> Add Lightbox) was selected for the answer page. This is a subpage, a common way of displaying advertisements on the internet, which is used here for pedagogical purposes. Even after the answer, the student can close the "Lightbox" and return to the game. The background of the lightbox is green, not red, because green is associatively associated with the right. If the background was red, it would mean to the student that the game ends with the answers.

Figure 5
Revealing the answer and the "X" button to return and correct errors



As mentioned above, in order for the student to check his/her answers, he/she needs to constantly open the answer page and return to the game. This repetition leads to learning the words that have been chosen. This is why an auto-correction does not appear. The correction is slowed down, the student participates in it, and in the end, he/she learns not only the meaning, but also the spelling of the words. The game is available for free access at the following link: <https://pan-alexopoulos.wixsite.com/thecategorygame>. For obvious reasons, both games are available in Greek.

RESULTS

PLATFORM ADVANTAGES

Wix offers a wide range of possibilities that can improve the creation of educational software-games and does not require any financial burden. One registration is enough for the teacher to start creating a game. Then, there are instructions from Wix, to familiarize the user. In this way, the construction of educational games becomes extremely easy through Wix, which can satisfy the teacher both in terms of appearance and content. Wix, unlike any other platform for creating games or websites, allows the teacher to start from scratch and freely place elements. Even after creating the game, at any time, easily and from any device (even from a "smart phone"), changes can be made and published. This means that the teacher can personalize the game for his or her students. Other web-building platforms follow a more stringent - formalistic policy and thus are not allowed to build games - websites in a similar way. Also, the platforms that allow the construction of toys, are also quite strict and restrictive in structure.

In addition, unlike other educational software that requires installation on a computer, one link is enough for students to start playing. This link is unique and is created by the teacher. He/she may also hide the game from the search engine (Google) or even require a password to enter the game, to keep students in a safe environment, as this will prevent a malicious user from gaining access. Finally, the teacher can see the total number of visitors—students who play and make a general supervision of the educational process.

ASSESSMENT

These digital games were given for evaluation to a Greek teacher in Washington, DC, USA. A2 level students played the game "LEARNING GREEK: FURNITURE - VEGETABLES - CLOTHES", while B2 students played the "DIFFICULT MISSION: ACTIVE - PASSIVE PENSION". Both groups found the games interesting, and there an increased interest was observed even among the shyest students. When another game was tried, which required typing words, it was found that the students could not type the Greek characters and wrote the Greek words using Latin characters. For this reason, the two games that do not require typing have been selected. The students of both groups successfully completed the games, and seemed satisfied. Some found the voices in the game "DIFFICULT MISSION: ACTIVE - PASSIVE PENSION" funny, and in a discussion that followed in the classroom for feedback, they asked for similar games in the future. Despite the difficulties and the limited sample of students, the goals were achieved and the quality assessment is considered positive overall.

IMPLICATIONS

As mentioned above, the first obstacle was the difficulty for students in typing a text in Greek. Of course, Wix is not responsible for this. This hurdle was overcome by placing buttons on options and transitions instead of boxes that required typing. It is worth mentioning that the platform is not available in Greek, which may be difficult for some teachers. However, the websites, - "software," made through Wix are compatible with the Greek text. In addition, although software installation is not required, accessing the games requires an internet connection. Despite the difficulties, it turned out that, indeed, Wix can be a platform that will bring innovations in education. More specifically, in the field of teaching Greek as a second foreign language, the results were very encouraging. This fact alone is undoubtedly an incentive for a more dynamic integration of digital gaming into the future of the education process.

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ABSTRACT

The curriculum in Special Education is based on the cultivation of children's individual skills and the experiential approach. This project entitled: "I make my own prints" refers to the STEAM approach for children attending primary education (Kindergarten and Primary School). This approach, using the principles of collaborative learning, encourages children to experiment with materials taken from nature and helps them to enrich their learning experiences with activities that make sense to them. Thus, it gives them the opportunity to ask questions about the natural world, to experiment with the elements that surround it and to make use of a visual style, which makes the whole process more interesting and playful. In fact, the combination of the STEAM approach with the project method gives impetus to universal participation while using digital applications that give the learning practice a more attractive character and helps the emergence of prior knowledge by increasing students' self-confidence, the ability to collaborate, self-evaluation and metacognition.

Key Words: STEAM training, work plan, leaf prints.

INTRODUCTION

The term STEM became known in the 1990s by the National Science Foundation of America as an acronym for the study of science, technology, engineering, and mathematics) (Zerva, 2018). Later, in the above fields, that of art (art) was included as well, the view was accepted that when art is included in the education of the individual, creativity is enhanced, which according to Jiuwara, (2012) is a component of innovation. Coincidentally, as Psycharis (2018) argues, the inclusion of art in education ensures the creation of a social whole, which combines literacy and competitiveness with creativity and imagination. Elements that signal properly trained and sensitized citizens of the 21st century, which of course include students who attend special education and training units.

It is certain that the STEAM approach must be applied in a unified way based on the connection of the above fields as a whole, which helps to develop mild problem-solving skills and to maintain knowledge as an integral whole (Henriksen, 2014). For its successful implementation in the classroom, the activity-centered approach is considered necessary with the initial emergence of the students' prior knowledge and their direct connection with real-life situations. It also uses the "problem-solving" learning model that follows two main phases, the initial one in which the existence of a problem (data) is recognized and the technique, which includes the desired result (solution). Of course, in order to solve a problem, the student needs to know how to work and be able to go through four stages: a) to understand the problem, the data, the purposes and the means, b) to proceed with the action plan by analyzing the parameters and objectives, c) to represent the data of the problem and d) to create a new relationship (Trilianos, 2008b).

Of course, all of the above must take place through the model of group research in which students are asked to work in groups of five - six people who choose the topic, plan the activities they are called to implement, perform them, present them by analyzing their steps and evaluate the whole effort of themselves and the other groups (self-evaluation and hetero-evaluation). All of the above take place in a democratic, collaborative atmosphere, the selection of activities is done by the students themselves using facilitating material for editing resources and with a slightly intrusive role of the teacher (Trilianos, 2008b).

STEAM and Special Education

In educational practice, the introduction of the STEAM approach has been intensified, resulting in a corresponding interest from all levels of education, from pre-school to tertiary. Through the involvement of students with constructions, technology, mathematics integrated into real needs and science, they learn to develop skills by building new knowledge in the already existing one, they learn to complete a project based on scientific specifications and do not hesitate to propose solutions to open, authentic and multidimensional problems utilizing trial and error (Katsavou, 2017).

In the special field of Special Education, the STEAM approach can offer many and interesting as the goals set in an e.g., construction work is specific and measurable and can help children build by going step by step. Also, the use of the PC, used in every STEAM project and the use of web 2.0 tools, can provide interaction between the child and the application as observable behavior and direct connection develop.

In addition, the implementation of a construction project presupposes the constructive didactic approach, according to which learning environments are activated that are manifested through the three Cs, i.e., the context (context), construction (construction) and collaboration (collaboration). The framework should be for authentic environments in a very simple form, which can activate internal motivations in the student, the construction is for the formation of knowledge through important and very tangible activities and finally, the cooperation refers to collaborative practices that take country within the classroom, in trying to find solutions through trial and error (Van Gorp & Grissom, 2001).

In this way, the teaching methods and techniques used are redefined and those conditions are created that modify the whole learning context and introduce learning through the analysis of work plans, which are also suitable for Special Education as it arises from the interests of children and activates their disposition for exploratory learning.

Together, they harness their curiosity and channel their energy by making constructions, more easily manage the signs of fatigue and distraction, maintain their interest for longer, cultivate their skills, work with their team feeling that they belong somewhere and boost their self-confidence. In addition, students who have some kind of difficulty through the use of the STEAM approach seem more capable of self-regulation and metacognition (Salvaras & Salvara, 2011).

THE WORK PLAN ENTITLED

This STEAM project work plan for children in Special Education schools is based on the constructive view that the learning environment becomes more engaging when it provides authentic real-life activities selected through experimentation and interaction with children with disabilities, special needs and not only these, are encouraged to act and cultivate their interests and sociability. In addition, it can contribute decisively to the process of inclusive education based on the social perspective of learning and coexistence with all participants in school life (Katsavou, 2017).

The cognitive content of this work plan is organized around a central axis that is implemented in the classroom by utilizing semi-structured dialogue, technology and reflection.

The objectives of the work plan, separately in each thematic field, according to the principles of the new Curriculum for Special Education and Training, are the following:

Child and communication, children become capable of:

- ✓ use the basic vocabulary for colors with confidence
- ✓ verbally list and count objects (sheets)
- ✓ make descriptions following the basic text structure (beginning - middle - end)

Child and science:

- ✓ recognize the morphological characteristics of the leaves
- ✓ to perform numbering but also to implement simple mathematical operations with natural numbers
- ✓ to collect and sort sheets based on given criteria

Child, self and society:

- ✓ to use autumn leaves for the purpose of art

Child, body, creation and expression:

- ✓ to get acquainted with the art of leaf imprinting
- ✓ to know the properties of crayons and watercolors
- ✓ to be able to express themselves through art (painting, music)

Cultivation of postures:

- ✓ to cultivate relationships with their classmates
- ✓ to develop feelings of love for nature by observing the changes of the seasons
- ✓ to develop feelings of love for the various art forms

In more detail, this work plan is structured in five main phases. The first utilizes the Harvard University approach "see, think, wonder" (Project Zero, 2016). Through images, the brainstorming technique is utilized, where all the first thoughts of the young students about the examined subject are recorded and a first histogram is created, after unification of common axes which is the basis for comparison with the later knowledge of the children on the same subject. The second refers to field research in which children are presented with information material, media and resources and are given the impetus for experimentation and testing. Through natural/ real materials children experiment, try and observe and in this way, they learn to combine real elements with experimentation. The third phase includes activities for the completion of the whole educational process, the evaluation (fourth phase) of the work plan is done with an interview that includes open-ended questions and at the end proposals are submitted for extension of the specific work plan and with topics that arise from their interests of students.

First phase

Before approaching the topic, it is advisable to do some kind of preparation in order to smoothly introduce the students to the topic of the subject. It is necessary for the teacher with previous activities to have acquainted the children with the autumn season and the changes brought about by the coming of this season in nature. Also, to have worked with the colors and the children to know the natural numbers from 1 to 5. It is also important to familiarize them with the work in groups that should be done on a daily basis.

The materials and means that will be needed are: natural autumn leaves in various sizes and colors, white crayons, white watercolor paper, adhesive tape, brush, water and watercolors.

In more detail:

The first phase of the work plan begins with the use of literature. In order to achieve the mobilization of the young students, the teacher enters the classroom with a puppet whose name is Ms. Squirrel, who visits the children to tell her adventure in the autumn forest where she lost her way to her nest due to the very thick mattress of leaves that were in the ground. Mrs. Squirrel was missing from her house for a long time and when she returned to her own forest, she could not find the way to her house because all the paths were covered with autumn leaves that had fallen from the trees. For this reason, she came to the school to ask for the help of the children and to ask them to give her solutions to find the way to her house. Along with her story, the puppet also presents images from the forest she lives in. Children are thus encouraged to take part in a semi-structured dialogue. The squirrel puppet directs the discussion and the children's words are recorded in three separate columns by the class teacher. What they see, what they think and what they wonder about, thus utilizing the "thinking routines" method.

Table 1
Thinking Routines

Thinking Routines		
I see	I think	I wonder
E.g., I see paths full of leaves	E.g., Why are the leaves on the ground and not on the trees?	E.g., Why do not the leaves always fall from the trees?

The children are then provoked to go out in the school yard or to visit the adjacent park in order to observe and collect leaves in various shapes and colors (green, yellow, orange, brown, simple and complex), the wind and the swirling of the leaves until their final fall to the ground (experiential observation).

Upon entering the classroom, the students are encouraged by the puppet to represent the dance of the leaves. First, they represent the green leaves that stand upright and arrogant, then the yellow ones that lower a little and finally the brown ones that fall to the ground without life. This motor activity is enriched by Vivaldi's music - the four seasons - during which the children dance according to the season (spring green leaves upright movement of children, summer partial yellowing of the leaves and lowering of the movement, autumn orange leaves and swirling in downward motion until the final fall to the ground brown leaves - winter). Alternatively, for consolidation and movement-color parallelism, the teacher shows cards with the corresponding colors, the children name the color, perform the movement related to it or listen to the music and show the corresponding color card (identification).

At this stage, a digital drag and drop application is used where children match the color of leaves and baskets to familiarize themselves with web 2.0 tools.

After the stage of familiarity with the leaves and the seasons has passed, the puppet-squirrel retells its story with some variations in which it presents pictures with paintings with leaf prints and challenges the children to a new semi-structured dialogue during which the teacher records their views on what they see, think, wonder. Then, their views are grouped into four main questions and with the digital application bubble us a concept map is created.

Figure 1
Concept map



Second Phase: Field research

This phase aims to find answers to the children's questions.

Initially, the teacher divides the students into groups in a random way using the digital “Wheel of names” application, where each child moves a wheel containing the names of all the participants. In

this way groups of five people are formed. Each group is given resources from which they can draw information on the subject of painting style with autumn leaf prints (pictures, web pages with similar material, books from the school library). After the children carefully watch and analyze the material with the help of the teacher, he / she presents to the plenary of the class, using the “Active Presenter” application, the above-mentioned style in an interactive way. In other words, it provides children with material with images about the style of leaf printing and the way in which this style is realized.

Then, with appropriate questions, the children are prompted to express their views and from their research the teacher outlines the content of their knowledge and records the course they went through. If necessary, the whole process is repeated.

After that, the materials are presented (crayons, brushes, watercolors, white paper). Children are encouraged to express their thoughts on the progress of the fingerprint style and to capture it on paper in the form of a work plan with numbered steps. They follow the course of "mechanical design" proposed by the try engineering organization and concerns the introduction of mechanical practice in the educational process that aims to enrich the skills that children have for their familiarity with technology. The process that is most easy to use is the one proposed by the Engineering is Elementary (EiE) program and includes five stages: 1) ask, 2) imagine, 3) design, 4) create and 5) improve. In other words, the students are encouraged, having as a guide the plan of the construction plan, to first discuss in their group how they will make their plan, after they have to imagine the means and materials that they will use to build it, to draw it on a A4 paper, create it and then, if necessary, improve it. In each teaching proposal the plan can be modified in order to meet the needs of the children. In addition, the steps with the phases of "mechanical design", which in this program is used for art, should be posted in a prominent place in the classroom.

Following the action plan, the teams ask the teacher how they will use the materials, collaborate and make the steps they will take, apply them and monitor the result. They present their creation per group in the class plenary. They also have the opportunity to modify their plan if they realize that this need arises. An indicative course of the action plan is the following:

1. place one or more autumn leaf under white watercolor paper or A4 plain paper
2. tape the paper to the table
3. with the white wax paint, I rub on the paper and in particular, on the whole surface of the autumn leaf
4. I wet a thick brush with water and paint the paper with watercolor
5. I have the visual effect of revealing the beautiful imprints of the leaves in various colors and shapes

At the same stage, the children, after having tried their action plan, can proceed with its improvement. Together, they can try to make their fingerprints using different materials (e.g., tempera, roll paper or meter paper, etc.) and draw their own conclusions. Also, in order to further integrate the field of mathematics, it is advisable to make a list of the materials they used by counting them and writing down all of them. But also, to identify colors and leaves, to carry out groupings with given criteria, etc.

Third Phase: Completion

The third phase includes the completion of the work plan. During this phase children can make an e-book using the “Flipsnack” application, send it to other schools and upload it to their school website. In addition, to invite other classmates to collaborate on new visual creations using different styles. Also, search the internet for various ways of painting paintings by famous painters and try to imitate them.

Fourth Phase: Valuation

The last phase is that of valuation. The children with the help of the teacher evaluate the results of the whole student process and as some of them may not have mastered the ability of conventional writing the teacher acting as a facilitator takes on the role of journalist by asking open-ended questions in the form of an interview and records the answers in the classroom teacher's diary. Questions like:

- Did you like the painting we did?
- Did any of what we did make it difficult for you?
- Would you like to suggest painting in another way?
- Did you work well with your friends?
- Do you enjoy working with others?
- Do you like to paint with brushes?
- Do you enjoy working with paints and brushes?

Alternatively, the teacher can give one of the children the opportunity to take on the role of journalist and ask questions to his / her classmates. For those of the children who have speech and language problems, it is advisable to give a questionnaire with closed type questions measured on the Likert scale with emoticons that show pleasure, dissatisfaction, average state, to evaluate the work plan themselves, circling the emoticon that represents.

Expansion activities

Children can create puzzles with photos from the prints they made, paper or digital with the digital jigsaw puzzle application and in this way have the puzzle of their class. Make an interactive poster with the whole course of the work plan they made and share it with their parents and guardians as well as a digital book with their work.

CONCLUSIONS

From the design of the teaching intervention with the STEAM approach it becomes clear that although this view is not directly combined with the Curriculum of Special Education and Training, it is known that in everyday teaching practice there are activities that encourage children to experiment with materials that help implement constructions that make sense to them and are connected to real life. Furthermore, this thematic treatment provides pleasure and enables a holistic cultivation of the student physiognomy, since through the student-centered designed activities almost all cognitive objects are utilized such as oral and written speech, mathematics, environmental study and of course art. Also, the students with the planning and implementation of the action plan are in front of the research process to find solutions to problems that arise during the course of action, to cooperate with each other and independently and to take responsibility for their personal learning, a fact which increases their self-esteem. In this way, they remain focused on their goal, exchange views and can evaluate the whole process with self-evaluative effort, events that are of the utmost importance in any educational process and especially in that concerning Special Education and Training that has as its horizon the inclusive act.

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TEACHING PYTHON VIA RUR-PLE (RUR - PYTHON LEARNING ENVIRONMENT) PLATFORM

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ABSTRACT

The main goal of programming education is to instruct students how to answer real-world problems via programming, after creating an algorithm based on their knowledge of essential programming notions. Furthermore, programming teaching can ameliorate students' capability of knowledgeable problem-solving through debugging and optimizing an executed program. Specifically, the primary target of programming instruction is not only to anyone to acquire the knowledge of programming but to productively meliorate the students' programming adequacy. A choice of Educational Programming Language (EPL) takes into consideration the students' level of knowledge is needed to best fulfil this. The use of programming microcosms is suitable for learning programming at early ages, such as high school students. However, entering Python into education, either as a specialty course in the IT sector, or as a general education course in all types of high schools, makes RUR-PLE a valuable tool to the teacher not only to teach the Python programming language but also to stimulate the indifferent students.

In this paper will be presented the RUR-PLE a Python based programming learning environment, based on the virtual robot which is called "Reeborg". The RUR-PLE has all the features of the programming microcosm, such as visualization of the solution, limited set of basic commands with simple syntax and step-by-step execution. Moreover, provides advanced lineaments of programming, through the robot environment, such as the ability to use variables, a feature which usually absents from other programming languages (Papadopoulos, Y. & Tegos S, 2012). All the above-mentioned features allow the educators not only to use the RUR-PLE not only for beginners but also for advanced users.

Key Words: RUR-PLE, Reeborg, Karel, Python, Programming.

INTRODUCTION

Microworlds are a special category of programming environments, with common features, such as using entities (a turtle, a robot, etc.) and a limited set of commands with simple syntax and significance. All the above-mentioned features lead the student learning the basic concepts of programming in a funny way (André Roberge, 2015). Moreover, the programming procedure in Microworlds is quite easy to be done, due to the lack of complicated environment that professional programming languages usually offers (Bergin, J, et.al ,1996).

The main "hero" of the RUR-PLEs' microcosm is the robot Reeborg. The word "robot" became part of the human language in 1920 through the work R.U.R. (Rossumovi Univerzální Roboti) by Czech author Karel Čapek (Čapek, K., 1990). Nobody until then, even the author himself, could even imagined how notorious could become. However, the English translation Rossum's Universal Robots

by Čapek in 1990 was used as a subtitle in the original Czech play at the premiere on January 25, 1921 and introduced the word "robot" into the English language (Crane, L, et.al, 2009; Elkner, J., 2004) . Karel Čapek's name became known in the world of computer science in 1981, when Richard Pattis wrote a wonderful book called Karel the Robot (Bergin, J, et.al ,1996). This book presented an introduction to the art of programming, by introducing the basic concepts of sequential programming (including loops and decisions, but not assignments to variables) using the example of assigning command execution to a robot that performs only four basic actions: move a step forward, turn left, collect beeper and drop beeper.

Through the magic of programming, the robot learns to combine these four basic actions in order to complete its increasingly complex tasks. Pattis another robot was using Pascal, the preferred language of the time, as a means of "teaching" with new functions. Since then, many new versions of Karel the Robot have appeared, commercial or not, used for introduction to various computer languages, in particular Java and C++ (Freund, S. N., & Roberts, E. S., 1996), both of which are based on the modern approach of Object-Oriented Programming. However, the complexity of Java and C++ instead of the simplicity of the microcosm offers in which the robot belongs and acts, and therefore contradicts to the idea of providing a smooth introduction to programming.

But why was Python used to program by Pattis? Python, like Java and C++, is a powerful object-oriented language, high level, interpreted, but simple and easy to learn, whilst is dynamic, efficient, productive, and scalable. Its features make it suitable for beginners, but also for experienced users, while it can be used both for educational purposes and for the development of integrated applications (Oliphant, T. E., 2007). However, Python also offers a non-object-oriented programming environment which is more suitable for interacting with Pattis ' robot. A first application of Karel the Robot in Python was called PyKarel, while another newer version called Guido van Robot (GVR briefly) (Papadopoulos, Y., & Tegos, S., 2012).

RUR-PLE is a new and improved version of GvR that expands Pattis' ideas and allows the smooth transition to the use of variables, as well as functions/methods, classes and objects. RUR-PLE is an integrated environment, whose teaching can cover the use of all Python keywords (Roberts, A., 2006) . An interpreter for direct execution of Python commands, and a simple text editor are included to explore Python outside the robot world. In addition, 40 courses in six different European languages (English, German, French, Spanish, Turkish and Welsh) are available to the developer to help him in his first steps in this new programming environment as long as he has wxPython installed on his computer. To these 40 lessons are added another 8 courses as individual topics, which aim to be the starting points of further investigation or usefulness by teachers.

The robot Reeborg built on the Pattis' model in 1981 and has begun to show its age. It has an oil leak that allows us to follow its path. Its compass is broken, and it only knows whether it is facing north or not, unlike Karel or Guido which can determine their orientation in relation to the four points of the horizon. But a new improved version of Reeborg robot appeared that we can setup everything from "the scratch" and which inherits the characteristics of Reeborg, expands the capabilities of the original robot and can use variables, generate random values, move into all directions, and control all points of the horizon and not only of the North (Wallén, J., 2008).

Recently, a similar application appeared, Rurple NG (Yoon, I., Kim, J., & Lee, W., 2016), which is aimed to people without prior knowledge of programming, and shows some improvements compared to RUR-PLE. However, the environment of Rurple NG is not appropriate for people to learn programming by themselves. This happens due to the early distribution of the application which lacks the necessary theory and examples, as provided by the programming environments of Karel and RUR-PLE. The purpose of this work is to highlight the microcosm of RUR-PLE, which can be a valuable tool to teachers and a suitable programming environment for students who want to learn the Python programming language (structured and Object-Oriented) (Xinogalos, S., et.al, 2015).

RUR-PLE and the world of the Reeborg robot

RUR-PLE is an educational tool that designed to help students of learning the Python programming language. It was originally created by André Roberge in 2015 and uses the concept behind the Karel robot, making learning programming in Python more interesting (Wallén, J., 2008). The student writes a program that controls a robot that moves through a city consisting of horizontal streets and vertical avenues that intersect creating blocks (sections of street or avenue) of the same length.

The streets and avenues are numbered, and the location of our "new" hero, Reeborg (such as Karel), is determined within this world by the number of the street and the avenue, i.e., the intersection where the robot is located (1st street - 1st svenue = intersection (1, 1)). Reeborg can move (when conditions permit) in four directions: North (to the top of the screen), East (to the right of the screen), South (to the bottom of the screen) and West (to the left of the screen). Initially, Reeborg starts on the corner, on the first street and first avenue, looking east and ready to move in that direction.

The world of Reeborg is enclosed by a wall, which prevents it from going out of these boundaries. In this world besides Reeborg it is possible to exist (Figure 1):

- wall sections of a block that prevent the Reeborg from moving directly from one intersection to another.
- beepers, small round objects that produce a beep when Reeborg stands in front of them and which it can collect in its pockets or to get beepers out of them and put them in front of itself.

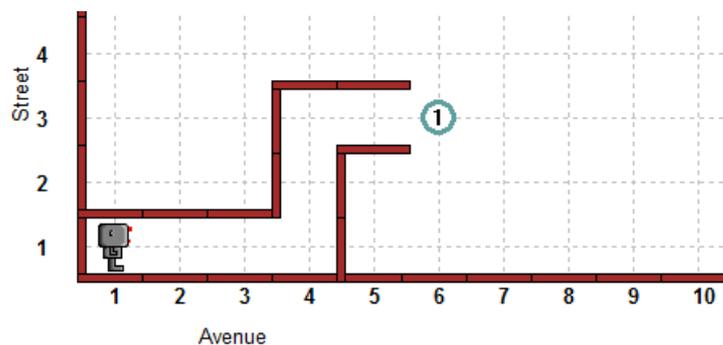


Figure 1. The world of Reeborg

In this world, Reeborg is called upon to carry out certain missions, such as closing a window in its house in order to prevent rain from entering in it during a storm, cleaning its yard after a storm, etc. However, the Reeborg robot does not have the intelligence and to carry out missions unless it is given precise instructions (commands). Specifically, Reeborg acts by reading and following a set of five basic commands called the program. When Reeborg cannot complete a mission or it is difficult to determine an effective way to deal with the problem, we can set new commands (Xinogalos, S., 2006). Unfortunately, during this research RUR-PLE showed bugs. The first bug that was noticed was about saving zero-sized program files. A solution to this issue, for those who deal with RUR-PLE, it is advisable to keep a backup copy using another text editor, such as Notepad++, avoiding them by writing the program all over again. The second bug that found, concerned the Object-Oriented Programming procedure, during the assignments of UsedRobot() and RefurbishedRobot () the created object (robot) is unable to perform the controls left_is_clear () and right_is_clear () .

Summary of commands that the Reeborg robot can execute

As mentioned above, the Reeborg robot can execute five basic commands which are:

- **move()** : take a step forward
- **turn_left()** : turn left
- **pick_beeper()** : pick up a beeper
- **put_beeper()** : drop a beeper
- **turn_off()** : termination (necessary instruction at the point where we want the program to end)

Also, with the assignment command (=) we can rename (almost) anything we like, for example: **moving=move**. The new instruction, **moving ()**, will do exactly what **move()** does in the program.

The language that is used to program the Reeborg robot is not our natural language, but a special programming language like our natural language which has vocabulary, syntax, and grammar rules (Xinogalos, S., 2006; Yoon, I., Kim, J., & Lee, W., 2016). Part of its vocabulary is most of Python commands and functions, such as **def**, **while**, **for**, **if**, **else**, **elif**, **class**, **pass**, **range()**, **len()** etc., as well as logical operators **not**, and **or**.

The controls that the robot can do are the follows:

- **front_is_clear()** : checks if the space in front of the robot is clear
- **left_is_clear()** : checks if the space to the left of the robot is clear
- **right_is_clear()** : checks if the space to the right of the robot is clear
- **next_to_a_beeper()** or **on_beeper()** : checks if in front of the robot there is a beeper
- **carries_beeper()** : checks if the robot is carrying beepers
- **facing_north()** : checks if the robot's direction is to the North

RUR-PLE also contains a special built-in function, `repeat`, which is equivalent to the `for` number in range (`number_of_times`): Python's command, which used for a predefined number of iterations:

- **repeat(function, number_of_times)** (e.g. `repeat(move,5)`)

In terms of object-oriented programming, the creation of one new or more robots as well as the initialization of their values (even though the Reeborg itself) is done with the **UsedRobot ()** function. For example:

```
Genius=UsedRobot()
Genius.move()
Genius.turn_left()
Genius.pick_beeper()
Genius.turn_off()
```

Advanced options:

- **set_trace_style(style=value, colour='colour name')** : Specifies the color of the trace (line) that lefts behind the robot. The style values can be in the range of 1 to 5, while the color can be any of the accepted colors of wxPython. For example: `set_trace_style (style = 3, color = 'red')`
- **set_delay(time)** : Causes a delay of 0 to 9 seconds depending on the value of the time. For example: `set_delay (3)`
- **Reeborg = UsedRobot(avenues=value, streets=value, orient_key='1st letter of horizon point', beepers=value, name='value', colour='colour name')** : Creates a new robot and initializes its parameters. The `orient_key` parameter can take one of the values 'E' or 'e', 'W' or 'w', 'S' or 's', 'N' or 'n', while the color parameter can take one from the values 'blue', 'light blue', 'purple' and 'green' (any other color displayed by the robot with the default color gray). Note that a "serial number" can be added to the robot name, so that each robot in an entire RUR-PLE game / work session has a unique name. For example: `Genius = UsedRobot (avenues = 1, streets = 1, orient_key = 'N', beepers = 5, name = 'X1', color = 'blue')`

New and improved robot!

Robot_name = RefurbishedRobot() : inherits from `UsedRobot` (e.g. `Genius = RefurbishedRobot()`)

Additional methods:

```
Genius.turn_right()
Genius.facing_east()
Genius.facing_south()
Genius.facing_west()
Genius.roll_dice(n): random integer number between 1 to n.
```

In addition, variables can be used, an ability that can be encountered in a few microcosm programming environments. For example:

```
Genius = RefurbishedRobot(colour='blue')
Genius.turn_left()
r=Genius.roll_dice(4) # r will take a random value in the range 1 to 4
```

```

if Genius.facing_north():
    repeat(Genius.move,r)
else:
    Genius.move()
    Genius.turn_right()
Genius.turn_off()

```

The programming environment of RUR-PLE

Tab *RUR: Read and Learn*

The initial tab of RUR-PLE (Figure 2), provides useful links, regarding courses, for beginners and some general guidelines for programming.

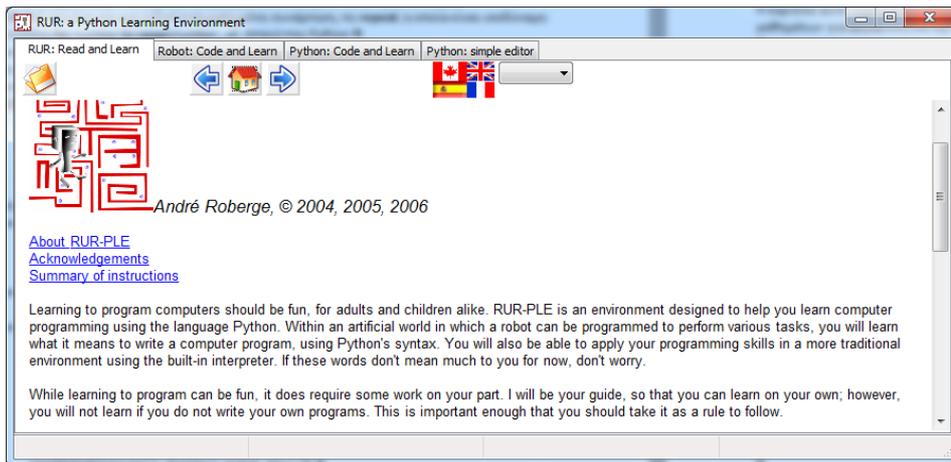


Figure 2. Initial tab of RUR-PLE (RUR:Read and Learn)

Tab *Robot: Code and Learn*

Figure 3 depicts the environment in which Reeborg "lives" and "acts". The window is divided into two main parts, in the left box of the window are entered the commands (the program) that the robot will be called to execute while in the right box is the "world" of the robot where we monitor the results of the instructions that we enter. Clicking the Toggle world file view button displays a new box to the right of the window showing the status of the robot and the world in which it is located (how many streets and avenues there are, how many beepers, etc.)

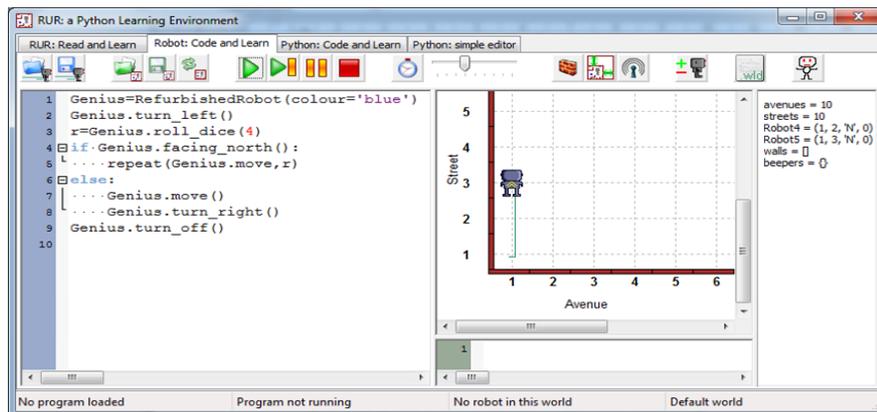


Figure 3. The environment in which Reeborg (Robot: Code and Learn) "lives" and "acts"

Tab *Python: Code and Learn*

This environment is similar to what is known to developers in Python as IDLE (Integrated Development Environment) and its simplicity makes it suitable especially for novice developers as it allows to write and execute commands immediately. It has a Python Shell window (Python interpreter console), which is offered for interactive and direct execution of commands by the interpreter (Figure 4). The various sections of some commands are colored properly and highlighted which helps a lot in writing them correctly. We can also repeat the execution of the commands we wrote by simply clicking the mouse at the end of the command by pressing Enter.

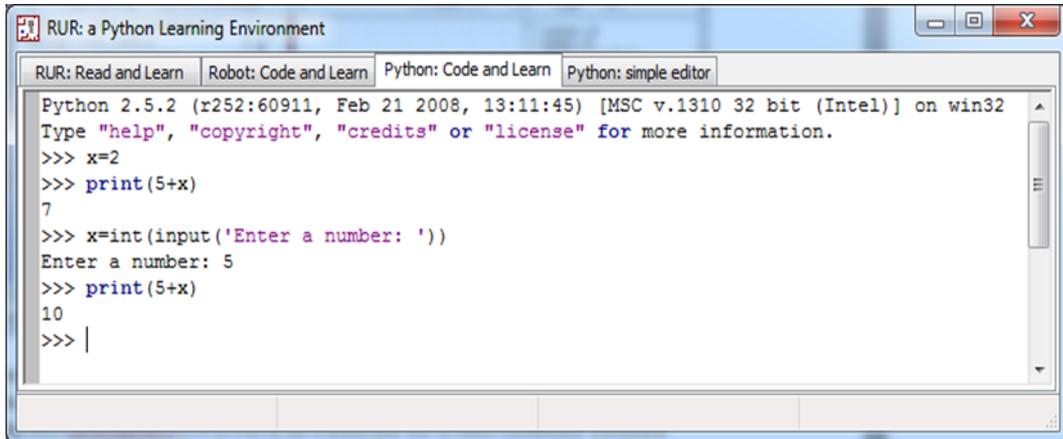


Figure 4. Python Interpreter (Python: Code and Learn)

Tab Python: simple editor

The editor window (Figure 5) supports many features, such as color text highlighting, running the program (it is also allowed to run the program with a list of arguments) and scrolling to the lines of the program. In such a window we first write our entire program (this way is called program mode), then we save it (not necessarily) in a file (.py) and at the end we run it (execute). The results of the execution are showed in a new box, next to or below the box with the program code (depending on the choice we made by pressing the Change layout button). The data input through the execution of the command input() displays a separate dialog box on the computer screen. The debugger detects, points out and displays the syntax errors of the program, in the same box that displays the results of its execution.

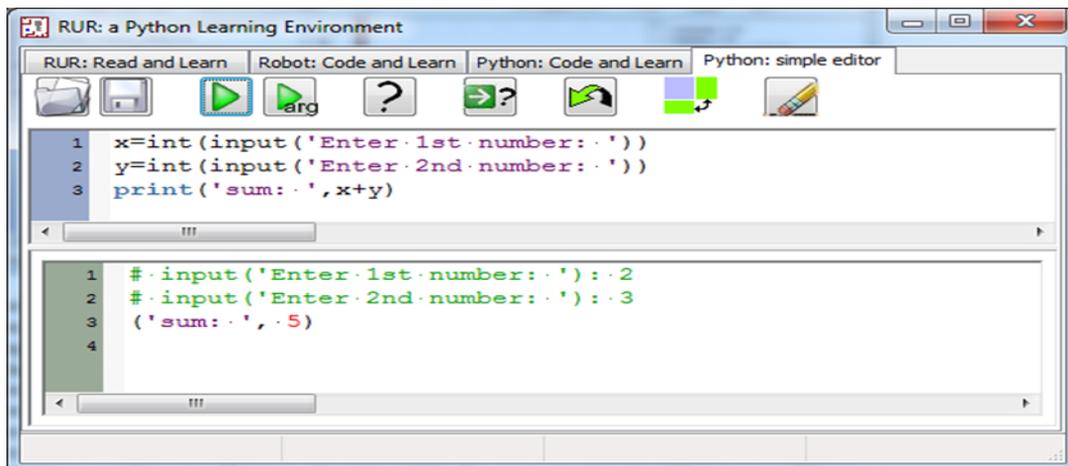


Figure 5. Python program editor

Pile sorting by beepers

The following program creates a new advanced robot named Genius that guides it to sort, in ascending order, a predetermined number of piles of beepers. The algorithm works for two or more piles,

provided that the array is properly assigned and initialized, which will keep record regarding beepers

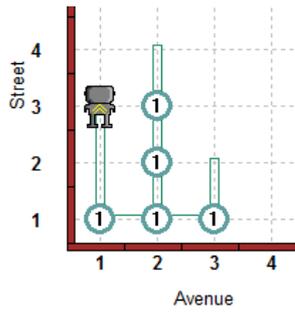


Figure 7a. Collecting beepers

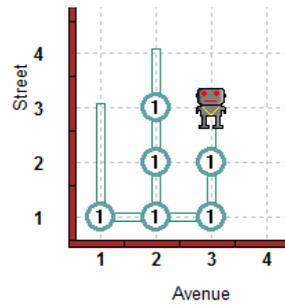


Figure 7b. Dropping the beepers

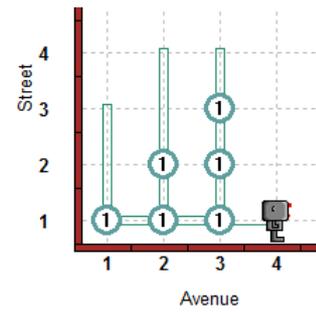


Figure 7c. End of sorting

The robot initially appears at the base of the last pile towards the west (Figure 6A). From this point it will start counting the number of beepers each pile contains and enter the data it collects in the corresponding positions of the array (figure 6B). When the robot completes the count, it takes a direction to the east and is now ready to begin the process of sorting the piles (figure 6C).

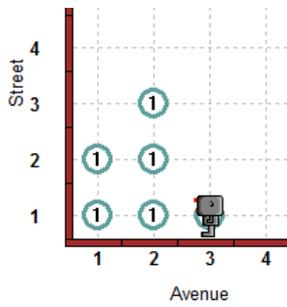


Figure 6a. Starting position

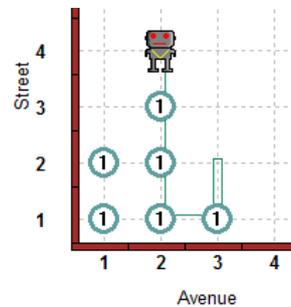


Figure 6b. Counting

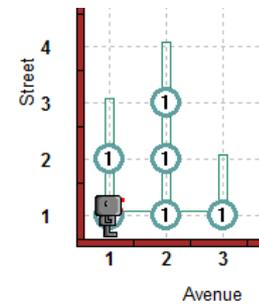


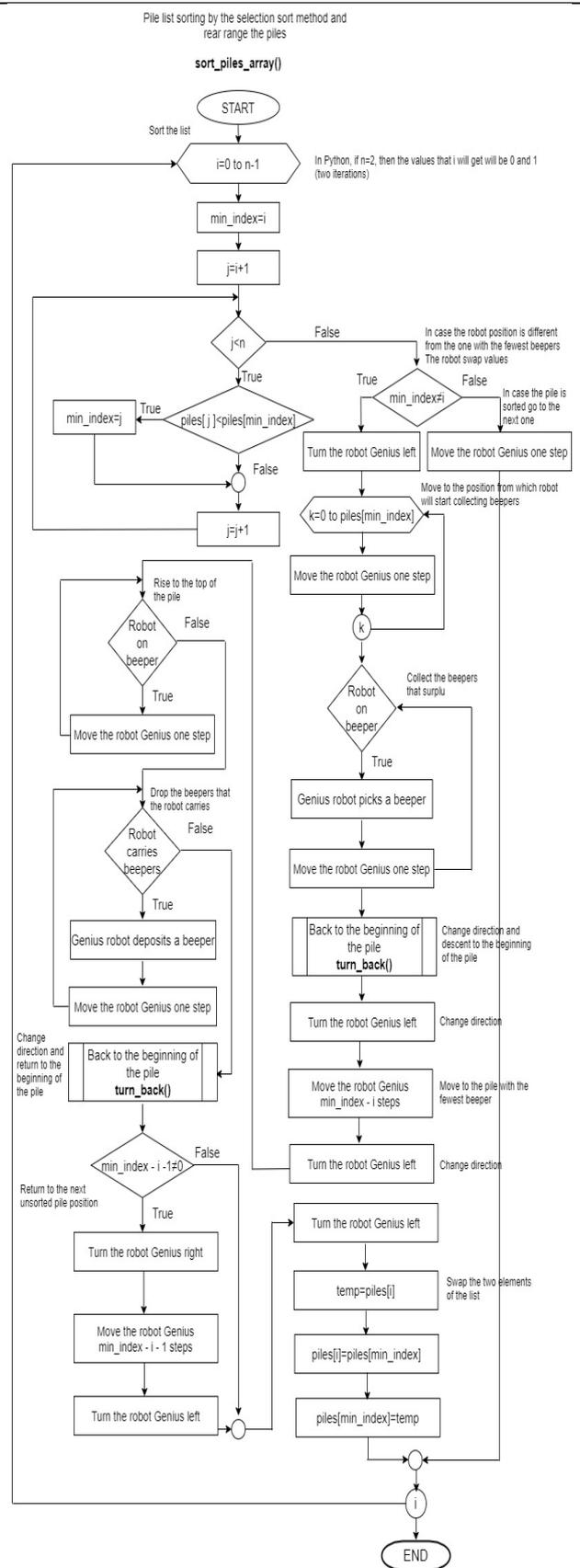
Figure 6c. Preparing for sorting

Using the selection method and based on the data listed in the array, Genius identifies each time which pile has fewer beepers from where it is located and to the end of the piles, leaves in the located pile only those beepers contained in the smallest pile and collects the remaining (Figure 7A). Subsequently, it moves to the location of the smallest pile, rises to the top of it, and unload all the beepers which carries with it (Figure 7B). Finally, the robot moves into the base of the pile and returns to the next position from the pile that was standing to repeat the above process until the end (figure 7c). The program also makes the necessary swap of the corresponding two values of the array. In case the pile, in which the robot is located is the smallest of all other piles (sorted item), then the robot simply moves to the next pile.

```

# Ascending classification of two piles – Selection sort
# -----
# Move to the next pile and prepare for the ascent
def next_pile():
    Genius.turn_right()
    Genius.move()
# Back to the top of the pile
def turn_back():
    repeat(Genius.turn_left,2)
    while Genius.front_is_clear():
        Genius.move()
# Count of beepers containing each pile
def count_pile_beepers():
    for i in range(n):
        # Rise of the robot in the pile counting
        Genius.turn_right()
        m=0
        while Genius.on_beeper():
            m=m+1
        Genius.move()
# Enter the number of beepers it counted and prepare to return to the beginning of the pile
    piles[n-i-1]=m
    repeat(Genius.turn_left,2)
# Back to the top of the pile
    while Genius.front_is_clear():
        Genius.move()
    if i!=n-1:
        next_pile()
    else:
        Genius.turn_left()
# Pile list sorting by the selection sort method and rear range the piles
def sort_piles_array():
    # Sort the list
    for i in range(n-1):
        min_index=i
        j=i+1
        while (j<n):
            if piles[j]<piles[min_index]:
                min_index=j
                j+=1
            # In case the robot position is different from the one with the fewest beepers
            # The robot swap values
            if min_index!=i:
                Genius.turn_left()
            # Move to the position from which robot will start collecting beepers
            for k in range(piles[min_index]):
                Genius.move()
            # Collect the beepers that surplus
            while Genius.on_beeper():
                Genius.pick_beeper()
                Genius.move()
            turn_back() # Change direction and descent to the beginning of the pile
            # Change direction and move to the pile with the fewest beeper
            Genius.turn_left()
            repeat(Genius.move,min_index-i)
            # Change direction and rise to the top of the pile
            Genius.turn_left()
            while Genius.on_beeper():
                Genius.move()
            # Drop the beepers that the robot carries
            while Genius.carries_beepers():
                Genius.put_beeper()
                Genius.move()
            turn_back()
            # Change direction and return to the beginning of the pile
            # Return to the next unsorted pile position
            if min_index-i-1!=0:
                Genius.turn_right()
                repeat(Genius.move,min_index-i-1)
                Genius.turn_left()
                Genius.turn_left()
            # Swap the two elements of the list
            temp=piles[i]
            piles[i]=piles[min_index]
            piles[min_index]=temp
        else:
            Genius.move() # In case the pile is sorted go to the next one
# Main program
piles=[0,0,0] # List assign
n=len(piles) # Calculate the number of list elements
Genius=RefurbishedRobot(avenues=n,streets=1, orient_key="W")
# Initializing the robot
count_pile_beepers() # Call the beepers count subroutine
sort_piles_array() # Call list and stack sort subroutine
while Genius.on_beeper(): # Move to the end of the piles
    Genius.move()
    Genius.turn_off() # Program termination

```



CONCLUSIONS

The basic target of a training program in a programming language is to introduce students how to respond into real-world problems via designing algorithms based on their knowledge of essential programming notions. Moreover, using programming languages on teaching procedure can improve knowledge through methods of debugging and optimizing an executed program. Especially, the main goal in programming lessons for beginners not just anyone gaining the knowledge of programming but to productively improve the programming competence. An EPL choice considering the level of knowledge of students that required to better fulfill this. Microcosm programming is a convenient tool for learning programming at an early age, such as in high school. However, entering Python programming language, as a general education course in all types of high schools, makes RUR-PLE an exceptional teaching tool not only to teach the use of Python programming language but also to trigger of indifferent students.

RUR-PLE provides all the characteristics of the programming microcosm, such as illustration of the programming flow, finite collection of python commands with simple ways of execution. In addition, offers advanced features of programming, through the robot environment, such as the capability of using variables, a characteristic which as it previously stated usually missing from other programming languages. Moreover, RUR-PLE, offered a Python programming environment, that allow teachers to provide advanced programming lessons.

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EDUCATION-HISTORY

THE IMAGE OF THE ARMATOLI AND THE THIEVES IN THE MEMOIRS OF NIKOLAOS KASOMOULIS

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ABSTRACT

The memoirs of the independence fighters, considered as mediated texts, have been used by Greek historians as one of the most important sources for the study of modern Greek history. These texts provide a variety of information for the study of the social and economic situation of Hellenism during the last phase of Ottoman rule in Greece, but also during the Revolution. The Memoirs would be worth mentioning as a supplementary material by the history teachers in the secondary education, with the ultimate goal of the correct documentation of the modern Greek History. Also, these sources offer, with brilliance, rich folklore elements of the Armatolian tradition and popular mythological ideas.

Key Words: Thieves, Armatoli, Greek Revolution, Memoirs, Nikolaos Kasomoulis.

PURPOSE

The proposed study is part of the social history of Greece during the pre-revolutionary and revolutionary period. Its aim is to investigate the image of boatmen and thieves, as presented in the work of Nikolaos Kasomoulis. The study of the Memoirs of the fighters of 1821 contributes to the correct understanding and learning of the aspects of modern Greek History by the students, as a supplementary study material in the history lesson.

RESEARCH METHODS

The present study is based on the Memoirs of the fighter, Nikolaos Kasomoulis, as well as on relevant literature. First, we give a general picture of rural society, as it developed during the Ottoman period, as well as the Greek gunmen and thieves, who formed the army of the revolution. The research is based on scientific documentation of historical and folklore elements of the Greek tradition, as presented by Kasomoulis. For the most comprehensive and comprehensive study of the subject, we examine the individual issues related to the role of gunsmiths and thieves, before and during the revolution of 1821. Therefore, the study of the Memoirs of the fighters of 1821 by the students, brings important results in the understanding and interpretation of Greek history.

The Memoirs as a Historical Source

In the present presentation, an attempt is made to approach the image projected in his memoirs by Nikolaos Kasomoulis about the Armatolos and the Thieves. Memoirs are one of the most important and objective sources during the pre-revolutionary and revolutionary period. They are a monument of Greek history (Georgios Chr. Alevras, 2017:111-128).

They are considered the most reliable from the memoirs of the fighters of 1821. In the work of Kasomoulis, valuable information is given about the daily life of the period of the Struggle, about the attitudes and mentalities of the fighters, about the clothing and the way of life in general (Dimaras Th. Konstantinos, 2000).

The author of the memoirs is aware that he witnessed or even contributed to a great event, so that he feels the need to save them in the later ones (Asdrachas Spyros, 2007). In most cases the memoirs refer to important political or military events (Nikolaou V. Georgios, 2006:297-298).

Thus, it would be worthwhile for them to be used as complementary material, in combination with the textbooks, by the history teachers in the secondary education, with the ultimate goal of the correct understanding and learning of the aspects of modern Greek History by the students.

The Memoirs of Nikolaos Kasomoulis

The way in which the Armatoli and the Thieves are presented in the Memoirs of Kasomoulis, could at the same time be one of the reference points for a study of the mentalities and perceptions of the Greek society of the 18th century and 19th century (Asdrachas I. Spyros, 1995:14).

In Kasomoulis' Memoirs - a work written with the conscience of a historian, without falsifications of facts and prejudices against persons - the performance of Kleftarmatoles is given in a completely personal way.

Kasomoulis, having as a basis of narration personal and family experiences, characterizes the persons and tries to interpret their actions (Kontakis Antonios, 1957).

First, the oppressive image of Ottoman rule is presented, which led some men to flee en masse to the mountains. In the harsh environment of the mountains, the psychosynthesis of the guerrilla was created, who resorts to kidnapping, mainly for reasons of survival (Vakalopoulos Apostolos, 2019).

The Image of Thieves

So the Thieves were organized in gangs, causing terror to the villagers and passers-by (Rodakis Periklis, 2014). They ambushed Greek and Ottoman merchants and travelers in difficult passages, robbed them or held them hostage for ransom (Apostolou Stergios, 1991).

Sometimes, groups of Thieves demanded ransom from villages and towns, as happened in Karpenisi in 1764. Their war tactics were perfect, due to their hard practice. According to E. Hobsbawm, robbers are people of action, not ideologues. They are divided into three categories, as follows: a) To the rural robbers who are active in an organized level, b) To the robbers of the villages who carry out raids and c) To the social robbers, who do not plunder the field of the ordinary farmer, but the areas of a tsiflika (Hobsbawm Eric, 1975).

He also notes the brave struggles of the Thieves against the Ottoman troops, without, however, trying to conceal facts in which the hatred of the Thieves was manifested with offensive expressions (Kafes Georgios, 2001).

A typical example is Karaiskakis, who refers to the Turks with very heavy descriptions: "infidels" and "dog Turks" (Kasomoulis Nikolaos, 1942:v.A:309).

Kasomoulis tries to remain unaffected by the hostility that divided the two peoples, to give the real picture of the period. An example is a Turkish warrior, who, responding to Karaiskakis who insults him, says that Greeks and Turks must live alone, because the Turks "are no strangers to want your ruin, they were born and raised with you from grandfather to grandfather" (Kasomoulis Nikolaos, 1942:v.A:310).

The Image of Armatoli

Ottoman rule was unable to enforce order, especially in the mountainous provinces. Thus, he used armed groups of former Thieves and chiefs, in order to limit the activity of the Thieves (Pizanias Petros, 2013). These armed groups were called Armatoli. The armatolikia are found in the 16th century during the reign of Suleiman the Magnificent. These areas were governed by councils of leaders and had armed corps with captains (Tzakis Dionysios, 2013). The most important armatoliki was from Agrafa (1525). Subsequently, seventeen armatolikia were created in central Greece, mountainous Thessaly, as well as in Macedonia (Sfiroeras Vassilis, 1975).

Kasomoulis mentions about the Armatolos that they depended on the villagers for food, information and recruitment. They imposed a hike on the villagers, which was paid from the community fund. In case the salary was delayed, the Armatoloi burned the villages (Pizanias Petros, 2013). It should be noted that this amount was not needed immediately, as the Armatoli did not pay taxes and carried out other economic activities (Vakalopoulos Apostolos, 1975).

In addition, the Armatoli maintained good relations with the Ottoman authorities. The chief Stournaris, -who was known for his diplomatic attitude towards the Ottomans-, when he died, gave advice to his successor: (Kasomoulis Nikolaos, 1942:v.A:199, 226).

Next, the author depicts the excessive ambition of the chief Ragos, who claims the *armatoliki* of Agrafa. Ragos, in collaboration with the Ottomans, seeks the removal of Karaiskakis from Thessaly in 1822. This attitude negatively affects the Greek fighters in the first years of the revolution. Kasomoulis analyzes Stornaris's decision to withdraw his army from the ranks of Ragos and move further south to Messolonghi, saying that "Ragos did not see how to avenge Karaiskakis" (Kasomoulis Nikolaos, 1942:v.A:406-407).

Kasomoulis gives us very important information about the second siege of Messolonghi. Having, therefore, lived closely the events of the siege and the heroic exit, he emerged as a reliable narrator of these events (Fotiadis Dimitris, 1965).

The author quotes the refusal of the chief Stornaris in Hatzibegi, to surrender to the Turks and argues that not only Ibrahim, but also the entire sultan's asker and if they carry him, the Mesolonghi will repel him (Kasomoulis Nikolaos, 1942:123-124).

Also, Kasomoulis does not hide the unacceptable act of Mitros's brother, whom he accuses and reprimands, as he went so far as to kill twelve Turkish prisoners. This is an inappropriate behavior, which of course is explained by the thirst for revenge. The behavior of Chief Javelas was also very harsh, when he ordered the killing of his faithful friend Arapis, due to his Turkish origin, as in the previous battles, he lost many brave warriors (Kasomoulis Nikolaos, 1942:v.A:252).

Kasomoulis's report on hearing the news of Karaiskakis's death is interesting. The leaders of the Turks ordered their men to wear black clothes, as a sign of mourning, as they had collaborated many times with Karaiskakis in the past. They knew his fighting spirit, experience and strength on the battlefields (Kasomoulis Nikolaos, 1942:v.A:515).

RESULTS AND DISCUSSION

Nikolaos Kasomoulis describes the events in an objective and impartial manner. Initially, his work presents the oppressive image of the Ottoman power, which led some brave men to flee en masse to the mountains of Greece. He also analyzes the gradual increase of thieves in the pre-revolutionary period, who were the main military corps of the Greeks in the revolution of 1821. These predatory groups, in collaboration with the *armatoloi*, were the "yeast of freedom".

IMPLICATIONS

In conclusion, Kasomoulis describes the various events in an objective and impartial manner, while trying to remain unaffected by the enmity that divided the two peoples (Greeks and Turks). Unlike other twentieth-century memoir writers, he avoids expressing contempt for the Turks, respecting their nation and appreciating their military prowess. The image of the "other" is projected on two levels: the general and the personal.

At the first level, obviously, the Turk is characterized as an "enemy", but rather as a tyrannical conqueror and pagan, and not as a foreigner. The opposite pattern in terms of identity and otherness is Muslim conqueror and Christian slave. His work highlights the violence of war, which deconstructs human relationships, as it is a struggle for self-determination and freedom and pushes people into brutal acts. With the beginning of the Greek revolution, the Thieves, together with the *Armatoloi*, were the only military force in Greece, which fought the Ottomans, with the implementation of the war of theft (Dakin Douglas, 1983).

Regardless of their initial motives, the Armatoli and the Kleftes were the "yeast of freedom". In particular, the contribution of thieves to the revolution gave rise to a change in meaning, the word thief.

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THE SYNERGY OF FINE ARTS TO THE ENGAGEMENT AND PROMOTION OF A LITERATURE PIECE OF WORK

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ABSTRACT

The study is a theoretical review of the contribution of Fine Arts (through their adventurous historical course) to the better reception and promotion of a literary text. At the same time, the various roles it assumes are also examined. Alongside, key factors are presented that contributed to the harmonious and fruitful cooperation of the Fine Arts and the interaction relationship that runs through them, with reality as the main point of reference. A piece of art depicts the free creation of the subject, causing at the same time genuine feeling to the spectator. A literature text, often, employs the powers of art to be intelligible.

Key Words: Fine Arts, Literature, Technology, Civilization, Society.

PURPOSE

The study aims to the presentation of determinant factors that have contributed to the excellent cooperation of Fine Arts through a relationship of interaction, having reality itself as a central axis-point of reference. In parallel, the ways through which a piece of art functions complementarily to the engagement and promotion of its various parts are also located. In modern times, the rapid evolutions of Technology offer a series of means for the best apprehension of literature work. The image, in combination with music, has a revealing impact on the representation of the work.

RESEARCH METHODS

The present piece of work constitutes a literature review regarding the contribution of Fine Arts (painting, engraving, sculpture, literature, music, theatre, cinema, photography, etc.) to the engagement and promotion of a literature piece of work, via their long historical course. At the same time, an analysis of the various roles of the above takes place. This interaction relationship that pervades the Fine Arts leads to amazing aesthetic results, while – at the same time – it also raises crucial socio-political issues of each era, fertiley troubling the thinking receiver (Kundera, 1993; Georgitsogianni, 2011).

INTRODUCTION

Etymological analysis of the term "Art"

The term "Art" refers to ancient Greek art. Its Indo-European root is "teks-neh2" < "teks-" [=carpentry]. In Latin, the term is transferred as "ars", while in modern languages as "art" (English, French and Catalan), as "arte" (Spanish, Italian and Portuguese), as "kunst" (German and Dutch, with a different pronunciation), as "taide" (Finnish), etc. (Triantaphyllides, 1998).

Semantic interpretation of the term

Art reflects the special nature of human activity, which leads to the creation of works aesthetically remarkable and absolutely perfect, which have imagination and elegance. Therefore, a work of art causes an important aesthetic effect on the viewer, instilling in him a variety of emotions. They are rejected (according to the above) by the characterization as "works of art" creations that are not inspired by imagination and elegance. Often these are classified in the category of monstrosities. Through careful observation of a visual work, the receiver may:

- Be possessed by various thoughts and concerns (regarding the causes and purpose pursued by the artist with the deposition of this work).

- Recalls in his memory personal experiences and situations of the past, which –in his opinion– are directly or indirectly related to the content of the work.
- Immersed in feelings of joy or sadness, excitement, or disappointment (depending on the content of the work).
- Recreates –through his creative imagination– the historical-political context that caused this particular artistic work (e.g., in Pablo Picasso's *Guernica* painting, the viewer sees all the violence and brutality of the Spanish Civil War, a war that certainly ignores every being –human and animal– in the name of bigotry and profit).
- Makes sociological comparisons in the case of a work that belongs to previous centuries, juxtaposing the current living conditions (Kambatza, 2019).

A typical example is the works of the French painter and founder of modern art Edouard Manet (directly linked to the current of Impressionisme) in which he represents the climate of the affluent order of his time (Francastel, 1974; Wilson, 1983); or his co-artist and compatriot Edgar Degas, founder of the above current, with an obsession with the themes of the dancers, the projection of movement (liveliness of work) and the sense of loneliness and melancholy that they exude (Gordon and Forge, 1988; Kendall, 1996).

As far as the texture of a work of art is concerned, this constitutes the magical and complex result of the inspiration of the creator-artist, the era in which he belongs, as well as the dominant artistic currents from which he may (consciously or unconsciously) be influenced and adopted in whole or in part. Regarding the reception of the artwork, the viewer takes into account the rules that it follows, depending on the current in which it belongs. Therefore, he must be prepared for this, leaving his imagination free in order to be able to discover the hidden secrets that the artist is trying to convey. Otherwise, the triple connection of creator/transmitter-creation/work-receiver/viewer will become impossible. Essentially, there will be a lack of communication, without any form of feedback and critical attitude of the public towards the creator of the artwork.

Therefore, if a visual work belongs –for example– to the current of Surrealism or Surrealism (French. "*Surréalisme*"), the receiver-viewer must be prepared for the surreal (unpredictable and modernistic) interventions of the artist (which certainly do not fall under the rules of logic), leaving his imagination completely free.

The result of this intoxication is the discovery of the hidden secrets and the highlighting of the value of the work.

MAIN PART

The collaboration of image and language in a visual work

It is a relationship of interdependence and interaction, as it is the ideal combination of communication means to make the message conveyed more comprehensible. In this relationship, the dominant role is assumed by the image, as a basic means of transmitting the content of an artistic work.

In a work of art (painting, sculpture, engraving, etc.), language is often used, in addition to the image (as a basic means of communication), in the second place, by subscription. Image and language are closely interdependent, since the former is adopted by non-verbal communication (which is the most important and effective type of communication), while the latter is adopted by verbal communication. For example, in a painting, often, certain poem verses are listed, reflecting the meanings of the first, in order to contribute to its better understanding. Moreover, the image, often, may be misinterpreted by the receivers or not fully understood, due to the different personality of the artist, but also the imaginary reality that he can express through it. For this reason, it is necessary to provide the linguistic elements.

Although language makes clearer the meanings that the creator seeks to convey, the image has great power, since it communicates directly with the receiver, through the senses, creating in him various emotions. On the other hand, according to Roland Barthes, words complete the picture and contribute to the clear determination of meanings (Barthes, 2005). Moreover, Literature and Art (mainly, Painting) move in parallel orbits, which can even lead to the fusion of the two artistic idioms (Angelatos, 2017). According to the principles of the Semantics of the image, in the present case, a second communication system is activated, which operates by subscription with the language. In fact, the message conveyed is more direct than the verbal one, which however – de facto– is clearer. The

positive effects of this dual relationship between image and language are evident in a children's book where the small reader-receiver is not able to know every meaning of the text, since he has not yet acquired sufficient linguistic and intellectual proficiency. In this way, the image complements, in an evocative way, to the child's perception of the meanings of the book. Looking back at the small circle of experiences and knowledge that a child possesses; he easily recognizes certain things and situations when they are depicted schematically. The words, at this stage, are probably complementary explanatory (Kambatza, 2019).

This perception of meaning through the image is already reflected in the primitive era and in the virtual representation of rituals and hunting scenes on the walls of the caves, in the effort of our ancestors to communicate elements of their culture to the descendants (Phor, 1993; Georgitsogianni, 2011). Thanks to these depictions, the way of living and preoccupation of the primitive becomes known.

The Fayum portraits, with the astonishing vibrancy of colors ("*burn technique*"), during the period of antiquity in Egypt, testify to the views-beliefs of the Egyptians on the connection of life and death and the continuity of the existence of the dead in another dimension (Janson & Janson, 2009).

The synergy of language and image in a literary work

The intertwined relationship between language and image also exists strongly in the case of a literary work. Of course, in the reception of a literary work, language assumes a dominant role. A literary work assumes a variety of roles (like a visual work).

As far as the internal features of Literature are concerned, Literature, as an Art of Speech, has certain internal criteria:

- The fictional element, which is, however, used in an artistic way by the writer (otherwise, fiction is also the narratives-stories of grandparents that are transmitted from generation to generation or comics).
- The adoption of a particular-peculiar language (reference is made to a "*divergent use of language*"), avoiding banal elements of the vernacular and frequent adoption of neologisms or, even local idioms (e.g., the case of the Writer Alexandros Papadiamantis of Skiathos), with the parallel use of magical images and the necessary challenge of emotion to the reader.
- The impractical-utilitarian character of her works.
- The challenge of aesthetic pleasure to the reader (time follows a creative-timeless course, often, the reality described is absolutely words, ideal, expressing the personal views of the author).
- The close relationship between the author, the literary work and the reader, which is renewed with channels of feedback and open dialogue.

The complex roles that a literary work undertakes

Literature, as a faithful reflection of reality –like Art, inspired by it– (Barthes, 1968 and 1982), takes on many roles:

- Socio-historical-political role: The author, through his works, narrates social events in the long run, seeking to inform and concern his reader. In this way, it provokes the reaction, the critical analysis of the receiver and finally, a mood of change of the socio-political situation by the reading public.
- Entertaining role: The plot of the project is adorned with certain elements of aesthetic pleasure. The main goal remains the aesthetic delight and relaxation of the receiver.
- Psychoanalytic approach of the heroes in order to identify the readers with them or to identify important, similar personal data in their character. In the present case, the text has a redemptive character, as the reader identifies vulnerabilities, weaknesses and difficulties in the lives of the heroes, similar to his own. At the same time, he distances himself from his personal problems and thus leads to introspection and self-criticism.
- Ethical role (character shaping): The reader, through a literary work, ponders, revises his views. Therefore, there is a gradual improvement of human characters, with mitigation of individual differences and conflicts (due to different characters, prejudices against other peoples, etc.).
- Cultural role: There is a promotion of the world cultural heritage and an emphasis on the importance of cultural identity and diversity for the harmonious coexistence of peoples.

Literary text and image.

- The operation of a work of art: A work of art captures the free creation of the subject, without the stereotypes of a strict methodology and control. And of course, it aims to stimulate genuine emotions from the viewer.

- The function of a literary work and its connection with the image: For its part, a literary text that has a remarkable aesthetic effect, often, mobilizes the forces of art to make it more accessible, more comprehensible and to highlight its value with impressive way. After all, Literature and Fine Arts have as a starting point – a basic source of inspiration and a means of creating reality itself (For, 1993).

A special case is the combination of poetry (especially, of modern modern poetry) and image where, in parallel with the quotation of a poem, there is a related work of art (painting, engraving), which acts completely explanatory of the text. For example, analysing and absorbing a text of contemporary modern poetry becomes a difficult and sometimes labyrinthine process for the average reader. In this case, the assistance of experts, literary critics, who dealt with the specific text or the citation of an image that however should be read correctly by the recipient is valuable.

- In the past, the image that played a subscriptive-explanatory role in understanding the text, appeared less often in a literary work. This tactic may have prevailed because there was a misconception that text should not be overshadowed by image (competing text-image roles).

Cinema (image + sound + music + technology) and literary work.

Furthermore, the cinematic performance of a literary work (where text, image, music and technological effects work harmoniously and creatively) makes the work more attractive, more understandable, more accessible. Characteristic is the case of the transfer to the cinema and television of the leading work *The Killer [I Fonissa]* by Alexandros Papadiamantis, where the heroine Frangogiannou commits the murders of little girls under the background of evocative, riveting music. Thus, the magical combination of text, music and image makes absolutely clear the meanings and ideas of the Skiathos writer who fought for the rights of the oppressed –by the male-dominated local society– woman of the time. Another typical example is the film version of the literary work *Germinal* by the French author and presenter of the stream of Naturalisme, Emile Zola, where the plot (rebellion and clash of the miners against the owners of the mine of their provincial town, claiming safe working conditions and better pay) culminates with a similar musical investment and the contribution of the image (color contrasts, dominance of black and red – symbols of death and misery).

In this way, in a literary work (as well as in an artistic one) key social, political and ideological issues are projected, reflecting and shaping the character of the receiver, while offering rich aesthetic pleasure. At the same time, the viewer becomes an eyewitness of events, prejudices, ideologies of another era (or his own). In addition, Technology –with the various means at its disposal– evokes strong emotions in the viewer, giving the impression that everything that takes place, right next to him, concerns him directly.

RESULTS AND DISCUSSION

Therefore, the Fine Arts Collaboration contributes significantly to the promotion of key socio-political and ideological issues of a literary work (Kundera, 1993; Georgitsogianni, 2011), while at the same time, the aesthetic pleasure of the receiver coexists.

Literature and Fine Arts (having as a springboard and source of inspiration the reality itself) take on identical roles (socio-political, entertainment, information, cultural, etc). This necessary relationship of interdependence was understood from the primitive era, as an attempt to capture the then culture and schematically (through the image).

Literature, over time, appears inextricably linked to the Fine Arts, in a noble collaboration for the promotion of key issues, aimed at reflection, critical analysis of works by the recipient and finally, the claim for a change in its structure. society and in general, the promotion of culture (Kambatza, 2018). That is, in their relationship the subversive and renewing element is distinguished. But also on a personal level, Fine Arts and Literature push the thinking recipient into a self-critical mood, a fruitful introspection and finally, a revision of views and attitudes towards fellow human beings. In fact, they contribute to the change and improvement of human characters, constituting an unexpected refreshing breath and hope for change and overthrow of established situations, social conventions and artificial social roles, which capture man and deprive him of his innate freedom.

IMPLICATIONS

In the future, the younger generations, having as a legacy the beneficial reflections of this harmonious and enchanting coupling of Fine Arts and Literature –whose main ally is Technology – (Apostolidou, 2012), will have to further cultivate this relationship, drawing the magical forces of the two factors, for a personal and social change. Particularly fertile ground for this application is found in the field of Education where the correct selection, analysis and critical consideration of a literary text by the teacher, while comparing a work of art that moves in the same spirit, will cause the expected fermentations and reactions in the receivers. The desired and expected result is of course the introspection and revision of established personal views, which lead to destructive phenomena of violence and racism and in general, to an anti-social and inhuman behavior. The appropriate literary text and the corresponding work of art are capable of conveying anti-racist, anti-war messages, suggestions and thoughts for a return to true human nature, full of feelings of solidarity, equality, friendship and brotherhood. Of course, in this project of changing and reviewing things through the provided education, the necessary ally and companion must be the State, with relevant regulations, will, financial support and practical promotion of the value of Fine Arts and Literature.

Only then will there be hope for an escape from the stage of decline that modern Western society is going through, especially with successive crises (economic, socio-cultural, health), in a state of return to civilization, purity, purity, resembling lost human nature.

Eventually, the Fine Arts and Literature (with the major contributor to the rapid developments of Technology) will become the hopeful guides of humanity to the light.

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