

## Magna Scientia Advanced Research and Reviews

eISSN: 2582-9394 Cross Ref DOI: 10.30574/msarr





(RESEARCH ARTICLE)



## Beliefs and attitudes of teachers of secondary education regarding the teaching of modern Greek as a foreign language, and the role of ICTs

Maria Geroula \*

Department of Greek Philology, Democritus University of Thrace Greece.

Magna Scientia Advanced Research and Reviews, 2023, 08(02), 176–192

Publication history: Received on 23 June 2023; revised on 09 August 2023; accepted on 11 August 2023

Article DOI: https://doi.org/10.30574/msarr.2023.8.2.0115

## **Abstract**

This research focuses on attitudes and beliefs of professors of secondary education regarding the teaching of Modern Greek as a second/foreign language to students. Initially, are mentioned the multiculturalism models and the basic principles of intercultural education. It is very important to distinguish the mother language (L1) from second (L2) and foreign (FL) language and to find the factors that influence their acquisition or learning. In the research part, is described the research methodology and the main purpose of research. More specifically, the sample of survey was 70 professors of Greek language and the research tool was the questionnaire. The attitudes of teachers are investigated with correlation to gender, level of education and years of teaching experience. Finally, follows the results in comparison with the results of other similar researches. Although teachers seem to support and apply to a large extent effective teaching practices for an intercultural education, do not seem to feel ready to support non-native speaker students in learning Greek. Therefore, it is necessary to be made radical changes to educational system in order to tackle assimilation and help teachers have confident to promote a real multicultural education.

**Keywords:** Models of Multicultural Education; Intercultural Education Teaching Modern Greek; Mother Language; Second Language; Foreign Language Language

## 1 Introduction

The interest in the present research is a result from cultural reality of society. It is fact that there is a continuous increasing flow of migratory which create the need for an effective education of foreign students, who are now an integral part of our society. Their smooth integration into education system is an obligation of the State and concerns all actors that are involved in the educational process. The research focuses on teachers of Greek language, who organize the learning process in such way that promote the achievement of students who come from a different culture, possess another mother tongue and face difficulties to learn modern Greek. In this new reality, the teachers are required to be prepared to deal effectively in the classrooms with non-native speaker students. For this purpose, after all, it is necessary not only to acquire the appropriate knowledge to deal with students who possess different cultural background, but adopt those attitudes and beliefs that promote multiculturalism in education (Pohan, Ward, Kouzekanani, & Boatright, 2009). Attitudes and beliefs of teachers in contrast to knowledge, are subjective and they greatly influence teaching practices that applied to the educational process (Snider & Roehl, 2007; Murphy, Delli, & Edwards, 2004). Therefore, their investigation is very important, because they reveal the way that teachers interpret social reality and the way that organize the teaching practice.

<sup>\*</sup> Corresponding author: Geroula Maria

## 2 Models of multicultural education - Intercultural education

The intense social and political problems of the last decades led to the increase of population movements. The integration of immigrants and of minorities in the education system was dealt with in a variety of ways by the different states depending on the multicultural approach adopted each time. More specifically, were applied the following multicultural education models (Govaris, 2011; Georgoyiannis, 2004):

- The assimilative model: This model appears in 1960 and its basic principle was that the various ethnic immigrant groups should not retain their nationality and racial characteristics, but they should fully accept the cultural standards of host country, so that they are absorbed in society. At school there is a monolingual and monocultural approach and the educational programs are based on the promotion of tradition of the host country (Neuner, 2012; Phillips, 2011). However, this assimilation led to school failure as students are cut off from each element of their cultural and linguistic identity (Govaris, 2011).
- The model of integration: The basic principle of this model is the respect for cultural differences concerning matters of religion, customs, traditions, etc. with the condition that they do not hinder the cultural principles of the dominant society. Tere is not change in educational policy and the concept of equal opportunities presupposes the conformity of minority groups to the dominant culture with the aim of creating a culturally homogeneous society (Markou, 1996). To facilitate immigrants in school and in society are designed and implemented programs which emphasize on the culture and history of host country with the rationale that this facilitates their integration (Nicolaou, 2011). The mother language has no place and everything is adapted to the linguistic and cultural characteristics of the dominant group (Phillips, 2011).
- The multicultural model: This model developed during the 1970s when appeared mobilizations of minority groups against discriminations. The basic principle of this model is that the cohesion of society is ensured only through the recognition of cultural particularities of all immigrant groups and the formation of a social framework that will allow the coexistence of all cultures (Georgoyiannis, 2004). Achieving this goal is an ongoing process which requires interventions in educational programs, as well as in the attitudes and beliefs of students and teachers (Banks & Banks, 2019). In this way school programs are based on mother language and national culture. Radical critics consider that the multicultural model focuses only on the cultural level and overlooks the real causes of discriminations against immigrants' groups (Neuner, 2012).
- The anti-racist model: At school according to the anti-racist model in order to face the school failure of students from minority and the discriminations of racial groups must be made radical changes concerning the programs studies, school textbooks, school life, etc. Many supporters of multicultural model target this model with the argument that in this context, the school risks becoming a field of competition between each political and social forces (Phillips, 2011).
- The intercultural model. It appears in the 1980s in Europe and it is the dominant until nowadays. It is based on mutual recognition, cooperation and interaction of different ethnic groups and aims to create societies which will be characterized by mutual respect and mutual acceptance (Georgoyiannis, 2004). It promises to create citizens that will be able to adapt and understand the new multicultural reality (Damanakis, 2002).

Intercultural education aims to change the school and society, so that all students regardless of cultural identity have equal opportunities and express themselves freely (Markou, 1997). Basic principle in intercultural education is the dialogue and the exchange of experiences between students with different cultural backgrounds who coexist in the local society (Damanakis, 2002). Thus, students appreciate the culture of other ethnicities and "different" does not function as factor of social exclusion and inequality, but favors mutual understanding and acceptance (Banks & Banks, 2019).

# 2.1 Mother or first language (C1), second language (C2), foreign language, bilingualism: definitions and clarification of concepts

It is a fact that in the multicultural societies of the modern era, many people are pushed to learn a new language besides their mother language. It is necessary to distinguish the terms mother or first language (L1), second language (L2) and foreign language (FL), as they present differences in the acquisition and learning process.

Initially, the acquisition of mother or first language (C1) is considered a self-evident and natural achievement as it does not need much effort or systematic teaching (Pinker, 2000). It is the language one acquires as a child in the environment where he grew up (Varlocosta & Triantafyllidou, 2013; Baker, 2007). The mother language has speed of acquisition, as all native speakers master its basic structures in the first five to six years of their age (Ortega, 2014). Also, it is characterized by a uniformity in the stages of its conquest independently from the target language (Saville-Troike & Barto, 2016). Every native speaker has language ability which is a subconscious innate knowledge of the elements of mother language and the ways in which they are combined. According to Noam Chomsky's theory of universal grammar,

every human being is born with an innate mechanism that makes the acquisition of his native language grammar possible. This innate mechanism is activated through environmental linguistic stimuli received by the individual (Cook & Newson, 2014; Doughty & Long, 2008). The mother language precedes the other language chronologically and is the dominant language of the speaker (Jessner & Cenoz, 2007).

A second language (L2) is defined as any language that be obtained or be learned by the person during his childhood, adolescent, or adult life after the acquisition of mother language (Saville-Troike & Barto, 2016; Ortega, 2014). It involves learning of languages both in the "naturalistic environment" and in organized teaching structures, such as classrooms (Gass, 2013; Brown & Larson-Hall, 2012). Sometimes there is confusion between the terms second language and foreign language language. The second language is the official and socially dominant language in one community. It is the common language of communication between the members of a community as they use another mother tongue. The acquisition of second language is necessary for work, education and smooth integration into society. Usually, it is acquired by refugees, immigrants and other minority groups who speak another language as native tongue.

On the contrary, the foreign language is not a basic and common language of one community and is learned primarily in an organized classroom environment. The purpose of learning is not immediate and necessary, but has to do with future one's travel purposes, cross-cultural communication occasions, academic acquisition qualifications etc. The learning of a foreign language is not necessary in order to cover basic living needs (Saville-Troike & Barto, 2016). However, it is worth noting here that and foreign language is a subcategory of second language. Of course, the goals and way of learning between L2 and foreign language are different.

Bilingualism is defined as knowledge and use of two different language codes by a person, who is called "bilingual" (Hoffman, 2014; Galantomos, 2012; Baker, 2011; Damanakis & Skourtou, 2001). Depending on the age of acquisition of each language, we distinguish different types of bilingualism (Skourtou, 2011). When a person is exposed to primary language data of two languages from the birth, it is a simultaneous bilingualism, i.e. a simultaneous acquisition of L1 and L2. However, when the learning of L2 happens in preadolescence/childhood we talk about early sequential bilingualism, while when the learning of L2 takes place in or after adolescence it is for late sequential bilingualism (Varlocosta & Triantafyllidou, 2003). It is worth to note that in present research all cases belong to the sequential bilingualism.

## 2.2 Learning a second/foreign language

Between mastering the mother tongue and learning a second one language there are several similarities and differences. Starting from the similarities it is important to mention the Critical Period Hypothesis of Lenneberg (1967) (Harley & Wang, 2014; Singleton & Muñoz, 2011). According to this, every man has some tools for the acquisition of his mother language, which are determined by biological factors and limit the time that somebody has at his disposal to master a language. This period is ending in adolescence. Through research it was proven that the same mechanism it is also activated during the process of learning a second language. The acquisition, therefore, of the mother tongue and the learning of second language is more effective before the end of the critical period, as the brain has plasticity and many functions have not yet been identified. Moreover, at first stages of learning a L2 and during the acquisition of the L1 is observed the silent period. The speakers, in other words, are slow to produce speech and are limited to use some memorized phrases. Of course, many times the speakers of a L2 often produce from the former days some incomplete structures. In general, the acquisition of mother tongue is a universal and natural process, while learning a L2 follows the acquisition of the mother tongue language (Saville-Troike & Barto, 2016; Ortega, 2014; Varlocosta & Triantafyllidou, 2013).

Another difference is that in the case of learning a second language many elements of the mother tongue are presented. They are subconsciously conveyed by the speaker's linguistic habits, structures and types of his native language, regardless of whether the two languages are structurally identical. It is also important that in learning a L2 there is variation in performance and to the degree of success of each individual. This is due to various parameters which affect the learning process (Dörnyei, 2006). According to Brown, the factors these can be summarized in the following questions: who, what, how, when, where and why (Varlocosta & Triantafyllidou, 2013).

The first factor (who) has to do with the speaker himself and specifically with his attitude towards C2, his personality and his social and educational background. When the speaker's attitude is positive towards L2, then it is often presented the phenomenon of additive bilingualism, where the speaker retains L1, but adds many elements of L2 in his daily communication. When the speaker is negative adjacent to the learning of L2 and the culture of this language, then it appears the phenomenon of monolingualism, where the use of L2 is very limited. Finally, often phenomena of subtractive bilingualism also appear with the replacement of L1 by the L2, when the speaker has a low regard for his

mother tongue. It's worth to note that the personality of the person also plays an important role. The introvert students perform better in learning discourse, while extroverts in communicative discourse (Dörnyei & Schmidt, 2001; Galantomos, 2012; Varlokosta & Triantafyllidou, 2003).

The second factor (what) relates to the nature of language. Particularly, it includes the knowledge that the person has about his native language, how to uses and how it connects it to learning L2. Knowledge of L1 determines in a large extent the individual's performance in learning L2. That's why not all L2s are of the same degree of difficulty for students of a specific C1. The historical, typological, morphological and syntactic relations between the two language systems create the appropriate conditions for positive transfer of parameters from one language system to another (Dörnyei, 2006; Gardner, 2010).

The third factor (how) relates to how a person learns a second language. First, an important role is played by the individual's innate predisposition, that is, whether the person by nature has an appeal and inclination (aptitude) to learn a L2. Some abilities that can predict a student's performance is his ability to connect sounds and meanings (mechanical learning ability), the ability to recognize grammatical functions of words (grammar awareness) and his ability to distinguish and connect objects with each other (speech decoding capability). The ways of learning, the strategies and the teaching that will be applied influence this factor (Bella, 2011; Dörnyei, 2006; Varlocosta & Triantafyllidou, 2003).

The fourth factor (when) has to do with the age at which one comes to contact with a L2. As mentioned above based on the Hypothesis of the Critical Period learning L2 is more effective at younger ages due to biological factors. That is why even the youngest children have a higher degree of proficiency and performance in L2. However, modern research has proven that older people have an advantage in terms of their learning ability, their thinking analyticity and their maturity. Adults often show a greater speed of learning morphology and syntax than younger children (Singleton, 2001; Brown & Larson-Hall, 2012).

The fifth factor (where) is based on the learning environment, i.e. whether the learning of L2 takes place in an organized classroom context or in an environment where it is socially the dominant language (naturalistic environment). Finally, the sixth parameter (why) concerns the motivation of learning. Incentives determine the degree of effort that each person will make in order to learn a L2, but also the performance. Motivations can be integration motivations or goal achievement motivations. In particular, the person in the first case is pushed to learn a L2 in order to identify and integrate into a foreign language community, while in the second case, the person seeks to learn a second language for reasons of social advancement, career, intellectual achievement etc. (Dörnyei & Schmidt, 2001; Masgoret & Gardner, 2003; Gardner, 2010).

Another important difference between the process of acquiring the mother language and in the learning process of L2 is fossilization. This term describes the phenomenon in which a L2 student despite continuous exposure to language input and the practice opportunities given to him fails to acquire language ability comparable to that of a native speaker (Gass, 2013; SavilleTroike & Barto, 2016). The student systematically produces incorrect formulas (repetitiveness) and remains stagnant at one point without making progress (permanence) (Han, 2003; Bella, 2011). The causes of the phenomenon of fossilization attributed both to internal factors (e.g. age, lack of cultural integration, desire to preserve the mother's cultural identity, etc.) as well as in external factors (e.g. lack of language input, incomplete feedback; etc.). Finally, it is worth noting that despite the differences mentioned between the two processes - learning L2 and acquiring L1 - there is an inseparable link between them, as well as they are interdependent and mutually influencing. In fact, according to Ortega (2014), the linguistic mistakes made in one's native language are responsible for the grade success in learning a second language.

## 2.3 Purpose and objectives of the research

The present research tries to penetrate an important area of education, which is intercultural education. The purpose of the research is to investigate the attitudes of Secondary Education teachers regarding teaching of Greek as a second/foreign language.

## 2.4 Research Questions

- Do teachers have the necessary knowledge to support non-native speakers in learning Greek language as C2?
- Do teachers know the basic principles of intercultural education?
- Do teachers have the necessary knowledge to support a non-native speaker student?

## 3 Research methodology

## 3.1 Sample

The sample of this research was derived from the random sampling method. This method was chosen, as it is the most classic and straightforward case random samples. In random sampling in order to get the intended sample, we directly select the participants from the single list of members population (Bell, 2007; Zafeiropoulos, 2015). Of course, a key parameter was to represent, as far as possible, all individual categories of the population (e.g. men-women, teachers with many years of teaching experience - teachers with fewer years of teaching experience, employees in general and intercultural schools, etc.). In particular, the sample were 70 teachers (61 women and 9 men) of Secondary Education, having experience both in intercultural schools as well as in Reception classes of General schools. The teachers came from 4 Intercultural schools (2 Lower Secondary Schools and 2 Upper Secondary Schools) and from 12 General Education High/Secondary Schools (9 Lower Secondary Schools and 3 Upper Secondary Schools) of administrative municipality of Athens, which provide Reception Classes.

## 3.2 Research tool

The research tool in this research was the questionnaire which gather quantitative data. The questionnaire as a research tool allows the collection of many data in a short period of time, ensures accuracy in answers and gives the ability to explore and compare multiple prices through a simple question (Kucsera, Roberts, Walls, Walker, & Svinicki, 2011). It is worth noting that the questionnaire was constructed with the help of online Google forms to be filled out by participants regardless of place and time. In addition, it has an introductory note, where the purpose of the research and the assurance of the privacy of the participants is confirmed. Regarding its structure, it consists of twelve (12) closed-ended questions (dichotomous and calibration), most of which are scale-based Likert-Type (no extent, little extent, some extent, large extent, very large extent). Closed-ended questions were selected, so that the answers are easy and short to complete. At the beginning of the questionnaire, questions are related to demographic characteristics of the sample (gender, age, years of teaching experience, level studies, attending seminars/trainings). The second section includes questions about the basic principles of intercultural education and examines both the percentage of foreign language students in school classes but also the teachers' ability in managing mixed classrooms effectively.

As the questionnaire is not weighted it was deemed necessary to carry out an audit for its validity and reliability. For this reason, the audit was carried out through Cronbach's alpha (Markos, 2012). As long as we notice that its price is greater than 0.8 (a= 0.855) the questionnaire is considered valid and reliable (Table 1).

Table 1 Reliability Statistics

Cronbach's Alpha	N of items
0.855	27

## 4 Results of the survey

## 4.1 Demographic characteristics of the sample

## 4.1.1 Sex

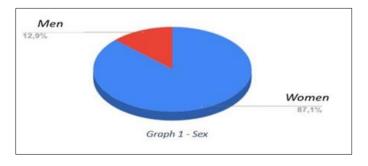


Fig 1 Sex Distribution

The sample, as shown in the following graph (Fig 1), consists of 70 secondary school professors of Greek language. More specifically, 61 are women (87.1%) and 9 are men (12.9%).

## 4.1.2 Age

Regarding the age of the teachers participating in the research, 43 teachers (61.4%) belong to the age group of 22-45 years and 27 teachers (38.6%) belong to age group 45-65 years (**Fig** 2).

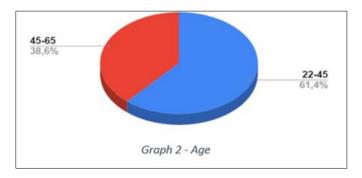


Figure 2 Age Distribution

## 4.1.3 Years of teaching experience

Regarding the years of teaching experience, it was observed that 41 teachers (58.6%) had experience from 0 to 10 years, 15 teachers (21.4%) had from 10 to 20 years of teaching experience and 14 teachers (20%) had more than 20 years of experience (**Fig** 3).

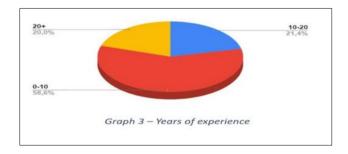


Figure 3 Years of Experience Distribution

## 4.1.3.1 Level of education

Regarding the level of education, as shown in Table 5 and Graph 5, 45 teachers (64.3%) hold a master's degree, 4 teachers (5.7%) hold a doctoral degree (PhD) and 21 teachers (30%) hold only their bachelor's degree (**Fig** 4).

From the descriptive analysis of the research data, the teachers' attitudes to the questions submitted as follows:

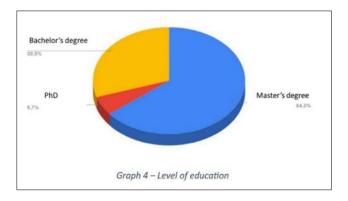


Figure 4 Level of Education Distribution

#### 4.1.4 Intercultural education

## 4.1.4.1 Question B1: What percentage do non-native speaker students represent in the classes that do you teach?

The majority of the sample, 46 teachers (65.7%), stated that the percentage of foreign language students in the classes where they teach represents 0-10%. The 21.4% of the total sample, i.e. 15 teachers, stated that the percentage of non-native speakers students ranges from 10-30%. The 10% of the total sample, i.e. 7 teachers, stated that the percentage of foreign language students is 50% or more, while only 2 teachers (2.9%) stated that their foreign language students represent 30-50% (**Fig** 5).

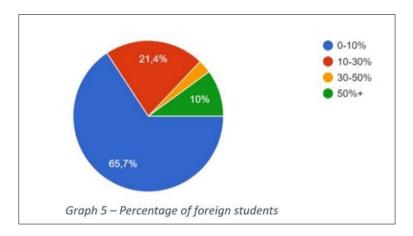


Figure 5 percentage of foreign students Distribution

## 4.1.4.2 Question B2: To what extent do you think that...

B2a) ... you have the necessary knowledge to support foreign language learners in learning modern greek?

The majority of the sample, i.e. 35.7% corresponding to 25 teachers, stated that they have much of the knowledge needed to support non-native speakers students in learning. The 32.9% (23 teachers) stated that they possess this knowledge to some extent, 22.9 (16 teachers) to a small degree, 5.7% (4 teachers) to a very large extent and 2.9% (2 teachers) not at all (**Fig** 6).

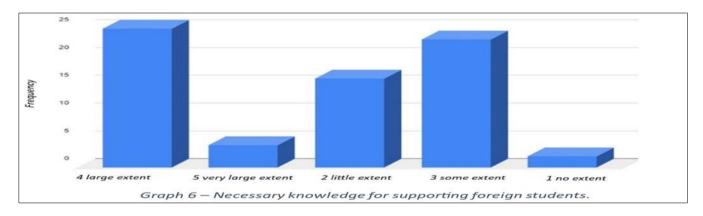


Figure 6 Necessary Knowledge Distribution

B2b) ... the teaching approaches you adopt when teaching modern Greek to foreign language students are effective?

The majority of the sample, i.e. 47.1% corresponding to 33 teachers, believes that the teaching approaches they adopt when teaching Greek to a non-native speakers are moderately effective. 32.9% (23 teachers) stated that their teaching approaches are very effective, 12.9% (9 teachers) that the teaching approaches are effective to a small extent, 4.3% (3 teachers) that they are effective to a very large extent and 2.9% (2 teachers) that they are not effective at all (**Fig** 7).

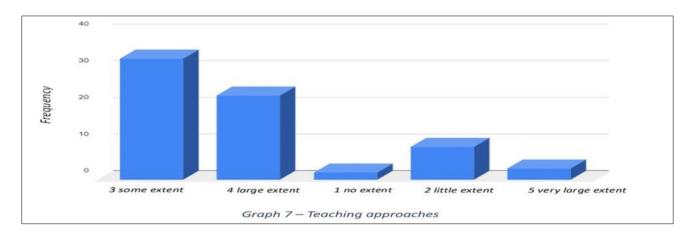


Figure 7 Teaching Approaches Distribution

B2c) ... the teaching of modern Greek to non-native students should aim to their assimilation into Greek society?

The majority of the sample, i.e. 28.6% corresponding to 20 teachers, strongly believe that teaching greek to non-native learners should aim to assimilation into Greek society. The same opinion but in a larger degree believe the 18.6% (13 teachers) of the sample. On the contrary, 21.4% (15 teachers) stated that teaching should not at all aim to the assimilation of students. The 17.1% (12 teachers) believe in this purpose to a moderate degree and finally 14.3% (10 teachers) support to a small extent the assimilation of foreign languages through teaching (**Fig** 8).

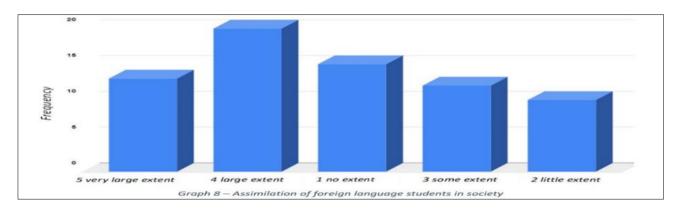


Figure 8 Assimilation in Society Distribution

B2d) ... teaching modern Greek to non-native students can lead to their equal social integration?

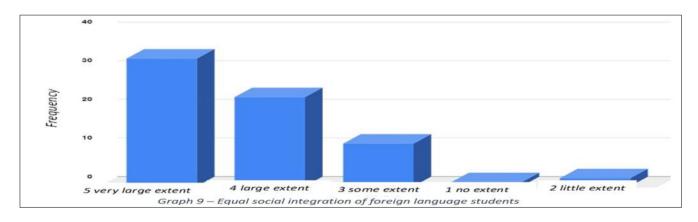


Figure 9 Equal Integration Distribution

The majority of the sample, i.e. 47.1% corresponding to 33 teachers, strongly believes that teaching Greek to non-native speaker students should aim to the equal social integration of them. The equal inclusion of students is largely supported

by 32.9% (23 teachers) of the total sample. On the contrary, 15.7% (11 teachers) believe in equal social inclusion through teaching to some extent, 2.9% (2 teachers) to a little extent and 1.4% (1 teacher) not at all (**Fig** 9).

B2e) ... the different linguistic and cultural background of foreign language students is it an obstacle to their school progress?

The majority of the sample, i.e. 30% corresponding to 21 teachers, believes to some extent that the different linguistic and cultural background of non-native speakers students is an obstacle to their school progress. 28.6% (20 teachers) stated that the different linguistic and cultural identity of foreign language students constitutes obstacle to their school performance to a large extent, 17.1% (12 teachers) to very large extent, 12.9% (9 teachers) to little extent and 11.4% (8 teachers) believes that the diversity of these students does not affect the school progress (**Fig** 10).

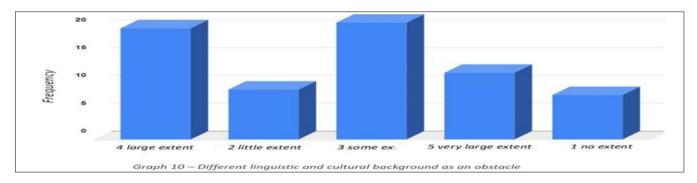


Figure 10 Different Backgrounds Distribution

## 4.2 Inferential analysis of results

In order to do the necessary correlations between teachers' attitudes for the teaching of Greek as foreign or second language and the demographics of the sample, some statistical tests were performed using the IBM SPSS statistical program STATISTICS (V.21). In particular, was used the test X2, which shows the existence of statistical dependence between two variables (Zafeiropoulos, 2015). For its implementation was used the correlation table. Therefore, for each question of the questionnaire, a correlation table and X2 test were carried out for the variables: gender, educational level and years of teaching experience. The check was carried out for an asymptotic significance (p) level of 0.05 and were used some hypotheses: The null hypothesis H0, in which the variables are independent and the hypothesis H1, in which the variables are dependent. In general, if the level of significance (p) is greater than 0.05 we cannot reject the null hypothesis, but when p< 0.05 we reject the null hypothesis (H0) and accept the alternative (H1).

## 4.2.1 Variable "Gender"

• Use of teaching materials of different cultures in teaching

Based on the inductive statistical analysis, gender appears to influence the extent to which the teachers use elements of different cultures in their teaching. The significance level (p) value is 0.019 < 0.05. Therefore, we reject the null hypothesis and accept the hypothesis, that both variables are dependent (use of teaching material - gender). It is obvious that women teachers tend to use when teaching Greek to bilingual students teaching material with elements of various cultures to a greater extent than men teachers. From the total amount of 61 women of the sample, 38 women use multicultural teaching material from large to a very large extent, while only 3 men out of 9 appear to be in favor of using such material.

## • Years of teaching experience

After statistical tests, it was found that the variable "years of teaching experience" not significantly correlated with any of the teachers' attitudes about teaching Greek as a foreign or second language. The level of significance was found in all questions p> 0.05. Therefore, we accept null hypothesis, according to which teachers' attitudes about teaching of Greek to non – native speakers students is independent of years of teaching experience.

#### Level of education

Finally, a check was made regarding the variable "level of studies. Based on the inductive statistical analysis, education level appears to influence the degree to which teachers believe they have the appropriate knowledge for support of foreign language students in learning Greek aw a foreign or second language. The significance level (p) value is 0.029 < 0.05. Therefore, null hypothesis is rejected, and we accept the hypothesis that the two variables are dependent (level of knowledge – level of education). It is obvious that the teachers who hold master's and doctoral degrees they consider themselves to possess in greater degree the necessary knowledge for teaching Greek to foreign - language students than the teachers who only have their basic qualification. More specifically, in the total of 49 teachers of the sample with master's and doctoral degrees, 23 teachers believe that they have the required knowledge to a large extent, while in the same degree only 2 of the 21 teachers without further education state that they possess this knowledge.

## 5 Discussion

The purpose of this research is to investigate the attitudes of professors of Secondary Education regarding the teaching of Greek as a second/foreign language. Regarding the first research question, which refers to the attitudes of teachers about whether they have the necessary knowledge to support foreign language students, were found to respond moderately to these demands and do not have the necessary knowledge to manage mixed composition classes. These data are also confirmed by the Vontsa's (2011) research, which conducted on 78 professors of modern Greek, from eight different Intercultural Schools, where 54.8% of the sample stated that their knowledge to support foreign language students are not sufficient. In research of Angelopoulou and Manesis (2018), which was conducted on 151 teachers of Primary Education, the majority of respondents (76.3%) stated that they have to a small extent the knowledge to support foreign language students in learning Greek language. This lack of knowledge is perhaps due to the fact that educational programs despite the multiculturalism that characterizes modern societies focus on the education of culturally homogeneous classes (Hijzen et al., 2006; Vedder &Horenczyk, 2006). As a result, teachers do not feel ready to adapt successfully in these new data (Milner, 2006; Dubbeld, Hoog, den Brok, & de Laat, 2017).

In addition, it was found that teachers do not seem confident to apply effective teaching practices when teaching Greek in non-native speaker students. In fact, we point out that the teachers who believe that they have the necessary knowledge to support foreign language students, most of them have a master's or doctoral degree. Many researches concluded that teachers' belief about the effectiveness of the teaching approaches which they adopt is directly linked to their training on issues of intercultural education (Gay, 2002; Wells, 2008; Groulx and Silva, 2010; Palaiologou, N., & Faas, 2012). Hatzidaki (2007a) in a research points out that teachers who undertake the teaching of Greek they often worry about the teaching practices which should be applied, since they do not have the appropriate training in these areas.

In the second research question, which refers to the knowledge of the basic principles and goals of intercultural education, teachers seem to support equal social inclusion of foreign language students. In a recent survey by Kustati et al. (2020) 90% of the teachers in the sample showed a positive attitude in the application of intercultural principles in education. There are many teachers who are in favor of multicultural classes and try to include foreign language students successfully in the educational system (Tsolakidou, 2005; Aktoprak, Yiğit, & Güneyli, 2018). Regarding the use of the mother tongue by the students, in the present research it appears that teachers allow in a moderate and large degree to their bilingual students to use the language of their family and social environment during teaching. In Sakellaropoulou's (2005) research, which conducted on kindergarten, teachers and the largest percentage of the sample appeared to allow students to use the native language during teaching.

However, teachers seem to use it to a small extent in oral interaction with non-native students the language of their family and society environment. It is worth noting here that although we are in a process of changing dominant perceptions and most teachers support the goal of intercultural education for the equal social integration of non-native speakers' students, often in practice seem to apply and reproduce the dominant ideology of monolingualism, emphasize on Greek language (Palaiologou & Faas,2012). Indeed, the teachers and the school are the ones who determine which language will be dominant for bilingual students during education process (Lucas & Grinberg, 2008). Although most of them seem to support bilingualism, in the teaching practices which they apply in the classroom they do not give the opportunity to non-native learners to use their mother tongue (Lee & Oxelson, 2006; Lee, Luykx, Buxton, & Shaver, 2007; Siwatu, 2007). For example, in research that conducted in Kansas, the total sample of teachers (327), appeared to be in favor of the theory of mother tongue use by bilingual students, but no one applied it in the classroom (Karathanos, 2009).

Therefore, the use of the mother tongue is limited to family environment of foreign language students, so that their exposure to the second language do not be affected (Papachristos, 2010; Skourtou, 2011). So, it seems that teachers do not recognize the Cummins's (2005) position about the "common underlying language ability of users", according to which teachers are called to promote the use of the first language (C1), in order students to progress more effectively in second language learning (C2). Reading skills and writing skills of first language are transferred to the second language. In Tsoleridou's (2009) research, although many teachers were in favor of the equal social inclusion of foreign language students, only three in ten said they supported the implementation of bilingual teachers' programs.

Given that teachers know the basic principles of interculturalism education, consistent with the fact that most of them use in a large extent during teaching material that contains elements of various cultures. According to Nikolaou (2011) during the education process act it is required to be done use of teaching material adapted to the needs and expectations of non-native speakers students, in order their culture equally be promoted. On the contrary, in the research of Vontsa (2011) 31 teachers (42.5%) of the total sample stated that they use multicultural teaching materials (e.g. posters, songs, dictionaries, etc.) to a small extent. It is worth noting that in the present research, gender seems to be directly connected with the use and selection of teaching materials. Specifically, from the entire sample, most teachers using teaching materials with elements of various cultures turned out to be women (61) rather than men (9). This finding is also confirmed in the research of Polat (2010) and Youngs and Youngs (2001) as the largest percentage that apply multicultural teaching materials in education process are women. Also, in the research of Aktoprak et al. (2018), female teachers appeared to have a generally more positive attitude towards multicultural education in relation to male teachers.

The positive and useful contributions that digital technologies provide to the field of language education should be highlighted as a final point. Mobile devices (61-64), a range of ICT apps (65-84), AI & STEM ROBOTICS (85-89), and games (90-92) are some examples of the technologies that enable and improve educational processes including evaluation, intervention, and learning. Additionally, the use of ICTs in conjunction with theories and models of metacognition, mindfulness, meditation, and the development of emotional intelligence [93-119], accelerates and improves educational practices and outcomes, especially in language learning practices and results.

#### 6 Conclusions

This research focuses on beliefs and attitudes of professors of Secondary Education regarding the teaching of Greek as a second/foreign. Evaluating our survey data, we conclude that teachers believe that they do not possess in the appropriate degree the necessary knowledge to manage bilingual students with learning difficulties. Despite multiculturalism that characterizes modern societies focuses on culturally homogeneous classes and educational programs are ethnocentric. An ethnocentric educational system isolates and marginalizes the bilingual children who come from a different culture and feel excluded from the educational process.

In addition, we found that teachers do not seem confident to apply effective teaching practices when teaching Greek to bilingual students. Teachers' beliefs about the ineffectiveness of teaching approaches they adopt is directly linked to their training on corresponding issues of intercultural education. Of course, in order teachers to acquire such abilities need education programs be modernized. Educational system needs educators who will think freely, have teaching abilities, but also resources that help to tackle inequality.

Regarding the use of the mother tongue by the students during teaching of greek as second/foreign language we found that teachers allow their bilingual students to use the language of family and society environment during teaching, but they themselves use it to a small extent in oral interaction with them. Following this, we conclude that although the teachers are in a process of changing the dominant perceptions about intercultural education, in practice they seem to apply and reproduce the dominant ideology of monolingualism emphasizing on Greek language.

In conclusion, teachers' beliefs and attitudes about teaching greek as second/foreign language is a broader educational topic that concerns the intercultural education. Undoubtedly, intercultural education must evolve into a more general one attitude to life, which will help to tolerate diversity, so that the people preserve their multicultural identity and resist to any kind of passivity assimilation.

## Compliance with ethical standards

## Acknowledgments

The Authors would like to thank the SPECIALIZATION IN ICTs AND SPECIAL EDUCATION: PSYCHOPEDAGOGY OF INCLUSION Postgraduate studies Team, for their support.

## Disclosure of conflict of interest

The Authors proclaim no conflict of interest.

#### References

- [1] Aktoprak, A., Yiğit, P., & Güneyli, A. (2018). Attitudes of primary school teachers toward multicultural education. Quality & Quantity, 52 (1), 181-194.
- [2] Angelopoulou, P. & Manesis, N. (2018). Intercultural Pedagogy and Counseling Intervention. Educators' Views. Educational review. 63. 13-27.
- [3] Baker, C. (2007). Becoming bilingual through bilingual education. Handbook of multilingualism and multilingual communication, 5, 131-152.
- [4] Baker, C. (2011). Foundations of bilingual education and bilingualism (5th ed.). UK: Multilingual Matters.
- [5] Banks, J. A., & Banks, C. A. M. (Eds.). (2019). Multicultural education: Issues and perspectives. John Wiley & Sons.
- [6] Bell, J. (2007). How to write a scientific paper: a guide to research methodology. Athens: Metaichmio.
- [7] Bella, S. (2011). The second language: acquisition and teaching. Athens: Patakis.
- [8] Brown, S. & Larson-Hall, J. (2012). Second language acquisition myths: Applying second language research to classroom teaching. University of Michigan: Press ELT.
- [9] Cook, V. & Newson, M. (2014). Chomsky's universal grammar. NY: John Wiley & Sons.
- [10] Damanakis, M. (2002). The education of Returned and Foreign Pupils in Greece.Intercultural Approach. Athens: Gutenberg.
- [11] Damanakis, M. & Skourtou, E. (2001). Terminology issues related to bilingualism and bilingualism education. Learning and Teaching Greek as a mother tongue and as a second language, Proceedings of the Conference, 88-89. Rethymnon: University of Crete.
- [12] Dörnyei, Z. (2006). Individual differences in second language acquisition. AILA review, 19(1), 42-68.
- [13] Dörnyei, Z. & Schmidt, R. (Eds.). (2001). Motivation and second language acquisition (Vol. 23). Natl Foreign Lg Resource Ctr.
- [14] Doughty, C. J., & Long, M. H. (Eds.). (2008). The handbook of second language acquisition (Vol. 27). NY: John Wiley & Sons
- [15] Dubbeld, A., Hoog, N. de, den Brok, P., & de Laat, M. (2017). Teachers' Attitudes Toward Multiculturalism in Relation to General and Diversity-Related Burnout. European Education, 1–16.
- [16] Galantomos, I. (2012). Bilingual courses. Thessaloniki: Epikentro.
- [17] Gardner, R. C. (2010). Motivation and second language acquisition: The socio-educational model (Vol. 10). Switzerland: Peter Lang.
- [18] Gass, S. M. (2013). Second language acquisition: An introductory course. New York: Routledge.
- [19] Gay, G. (2002). Preparing for culturally responsive teaching. Journal of Teacher Education, (53), 106-116.
- [20] Georgoyiannis, P. (ed.) (2004). Theories of Social Psychology, Volume III, Scientific Series: Social Psychological Approaches to Education Intercultural Education. Athens: Gutenberg.
- [21] Govaris, X. (2011). Introduction to Intercultural Education. Athens: Interaction.
- [22] Groulx, J. G. & Silva, C. (2010). Evaluating the development of culturally relevant teaching. Multicultural Perspectives, 12(1), 3-9.

- [23] Han, Z. (2003). Fossilisation: From simplicity to complexity. International Journal of Bilingual Education and Bilingualism, 6(2), 95-128.
- [24] Harley, B., & Wang, W. (2014). The critical period hypothesis: Where are we now?. In Tutorials in bilingualism (pp. 19-51). Psychology Press.
- [25] Hatzidaki, A. (2007a). The participation of immigrant parents in the education of their children: The teachers' perceptions and parents' practices. In Dinas, K. and Chatzipanagiotides, A. (Ed.) Proceedings of the International Conference: The Greek language as a second/foreign language. Research,teaching and learning (pp. 732-745). Florina: University.
- [26] Kustati, M., Yusuf, Y. Q., Hallen, H., Al-Azmi, H., & Sermal, S. (2020). EFL Teachers' Attitudes towards Language Learners: A Case of Multicultural Classrooms. International Journal of Instruction, 13(1), 353-370.
- [27] Macedonia. Thessaloniki: University Studio Press. Hijzen, D., Boekaerts, M., & Vedder, P. (2006). The relationship between quality of cooperative learning, students' goal preferences, and perceptions of contextual factors in the classroom. Scandinavian Journal of Psychology, 47, 9–21.
- [28] Hoffmann, C. (2014). Introduction to bilingualism. New York: Routledge.
- [29] Jessner, U., & Cenoz, J. (2007). Teaching English as a third language. In International handbook of English language teaching (pp. 155-167). Springer, Boston, MA.
- [30] Karathanos, K. (2009). Exploring US mainstream teachers' perspectives on use of the native language in instruction with English language learner students. International Journal of Bilingual Education and Bilingualism, 12(6), 615-633.
- [31] Lee, O., Luykx, A., Buxton, C., & Shaver, A. (2007). The challenge of altering elementary school teachers' beliefs and practices regarding linguistic and cultural diversity in science instruction. Journal of Research in Science Teaching, 44 (9), 1269–1291.
- [32] Lucas, T., & Grinberg, J. (2008). Responding to the linguistic reality of mainstream classrooms: Preparing all teachers to teach English Language Learners. In M. Cochran-Smith, S. Feiman-Nemser, & J. McIntyre (Eds.), Handbook of research on teacher education: Enduring issues in changing contexts (3rd ed., pp. 606–636). Mahwah, NJ: Lawrence Erlbaum.
- [33] Masgoret, A. M. & Gardner, R. C. (2003). Attitudes, motivation, and second language learning: A meta-analysis of studies conducted by Gardner and associates. Language learning, 53(S1), 167-210.
- [34] Markou, G. (1996). Approaches to Multiculturalism and Intercultural Education Training of Teachers. Athens: YP.E.P.Th., G.G.L.E.
- [35] Milner, H. R. (2006). Classroom management in urban schools. In C. M. Evertson & C. S. Weinstein (Eds.), Handbook of classroom management: Research, practice, and contemporary issues. Mahwah, NJ: Lawrence Erlbaum Associates.
- [36] Murphy, P.K., Delli, M.E., & Edward, M.N. (2004). The good teacher and good teaching: Comparing beliefs of secondgrade students, preservice teachers, and inservice teachers. Journal of Experimental Education, 72, 69–89.
- [37] Neuner, G. (2012). The dimensions of intercultural education. Intercultural competence for all. Preparation for living in a heterogeneous world, 11-50.
- [38] Nikolaou, G. (2011). Intercultural Teaching. The new environment Basic principles. Athens: Pedio
- [39] Ortega, L. (2014). Understanding second language acquisition. Routledge.
- [40] Palaiologou, N., & Faas, D. (2012). How 'intercultural'is education in Greece? Insights from policymakers and educators. Compare: A Journal of Comparative and International Education, 42(4), 563-584.
- [41] Papachristos, K. (2010). Continuing intercultural education: Pedagogy and teaching teachers' readiness in the modern Greek school. Unpublished PhD Thesis, National and Kapodistrian University of Athens. Athens, Greece.
- [42] Phillips, C. (2011). Institutional racism and ethnic inequalities: An expanded multilevel framework. Journal of social policy, 40(1), 173-192.
- [43] Pinker, S. (2000). The Linguistic Instinct: How the Mind Creates Language. Athens: Katoptro.

- [44] Pohan, C. A., Ward, M., Kouzekanani, K., & Boatright, C. (2009). The Impact of Field Placement Sites on Preservice Teachers' Beliefs about Teaching Diverse Students. School-University Partnerships, 3(1), 43-53.
- [45] Polat, N. (2010). Pedagogical treatment and change in preservice teacher beliefs: An experimental study. International Journal of Educational Research, 49(6), 195-209.
- [46] Sakellaropoulou, E. (2005). Kindergarten teachers' attitudes towards cultural diversity as integration factor of foreign children in Kindergarten. Unpublished PhD Thesis University of Ioannina. Ioannina Greece.
- [47] Saville-Troike, M., & Barto, K. (2016). Introducing second language acquisition. Cambridge University Press.
- [48] Singleton, D., & Muñoz, C. (2011). Around and beyond the critical period hypothesis. Handbook of research in second language teaching and learning, 407-425.
- [49] Singleton, D. (2001). Age and second language acquisition. Annual review of applied linguistics, 21, 77-89.
- [50] Siwatu, K. O. (2007). Preservice teachers' culturally responsive teaching self-efficacy and outcome expectancy beliefs. Teaching and teacher education, 23(7), 1086-1101.
- [51] Skourtou, E. (2011). Bilingualism at school. Athens: Gutenberg.
- [52] Snider, V. E., & Roehl, R. (2007). Teachers' beliefs about pedagogy and related issues. Psychology in the Schools, 44(8), 873-886.
- [53] Tsokalidou, P. (2005). The invisible bilingualism in the Greek school: Survey data. Education Sciences, 3, 37-50.
- [54] Tsoleridou, A. (2009). The contribution of the educational system to the integration of immigrants. The views of primary school teachers. Unpublished Ph.D Dissertation, Aristotle University of Thessaloniki, Greece.
- [55] Varlocosta, S. & Triantafyllidou, L. (2003). Defining Language Levels in Greek as a Second Language. Athens: Center for Intercultural Education, EKPA.
- [56] Vedder, P., & Horenczyk, G. (2006). Acculturation and the school context. In D. L. Sam & J. W. Berry (Eds.), Cambridge handbook of acculturation. Cambridge, UK: Cambridge University Press.
- [57] Vontsa, V. (2011). Correlation of the attitudes of the teachers of intercultural high schools towards their nonnative students and the practices they apply during the teaching of the modern Greek language. PhD Dessertation, Democritus University of Thrace (DPTH).
- [58] Wells, R. 2008. The global and the multicultural: Opportunities, challenges, and suggestions for teacher education. Multicultural Perspectives, 10 (3), 142–9.
- [59] Youngs, C. S., & Youngs, G. A. (2001). Predictors of mainstream teachers' attitudes toward ESL students. TESOL Quarterly, 35 (1), 97–120.
- [60] Zafeiropoulos, K. (2015). How is a scientific paper made? Athens: Critique.
- [61] Stathopoulou, et all 2018, Mobile assessment procedures for mental health and literacy skills in education. International Journal of Interactive Mobile Technologies, 12(3), 21-37, https://doi.org/10.3991/ijim.v12i3.8038
- [62] Kokkalia G, AS Drigas, A Economou 2016 Mobile learning for preschool education. International Journal of Interactive Mobile Technologies 10 (4), 57-64 https://doi.org/10.3991/ijim.v10i4.6021
- [63] Stathopoulou A, Karabatzaki Z, Tsiros D, Katsantoni S, Drigas A, 2019 Mobile apps the educational solution for autistic students in secondary education Journal of Interactive Mobile Technologies 13 (2), 89-101https://doi.org/10.3991/ijim.v13i02.9896
- [64] Drigas A, DE Dede, S Dedes 2020 Mobile and other applications for mental imagery to improve learning disabilities and mental health International Journal of Computer Science Issues (IJCSI) 17 (4), 18-23, DOI:10.5281/zenodo.3987533
- [65] Drigas, A. S., J.Vrettaros, L.Stavrou, D.Kouremenos, 2004. E-learning Environment for Deaf people in the E-Commerce and New Technologies Sector, WSEAS Transactions on Information Science and Applications, Issue 5, Volume 1, November
- [66] Drigas, A., Koukianakis, L., Papagerasimou, Y., 2011, Towards an ICT-based psychology: Epsychology, Computers in Human Behavior, 27:1416–1423. https://doi.org/10.1016/j.chb.2010.07.045

- [67] Papanastasiou, G., Drigas, A., Skianis, C., and Lytras, M. (2020). Brain computer interface based applications for training and rehabilitation of students with neurodevelopmental disorders. A literature review. Heliyon 6:e04250. doi: 10.1016/j.heliyon.2020.e04250
- [68] Drigas, A., & Papanastasiou, G. (2014). Interactive White Boards in Preschool and Primary Education. International Journal of Online and Biomedical Engineering (iJOE), 10(4), 46–51. https://doi.org/10.3991/ijoe.v10i4.3754
- [69] Drigas, A. S. and Politi-Georgousi, S. (2019). ICTs as a distinct detection approach for dyslexia screening: A contemporary view. International Journal of Online and Biomedical Engineering (iJOE), 15(13):46–60. https://doi.org/10.3991/ijoe.v15i13.11011
- [70] Drigas A, Petrova A 2014 ICTs in speech and language therapy International Journal of Engineering Pedagogy (iJEP) 4 (1), 49-54 https://doi.org/10.3991/ijep.v4i1.3280
- [71] Bravou V, Oikonomidou D, Drigas A, 2022 Applications of Virtual Reality for Autism Inclusion. A review Retos 45, 779-785https://doi.org/10.47197/retos.v45i0.92078
- [72] Chaidi I, Drigas A, 2022 "Parents' views Questionnaire for the education of emotions in Autism Spectrum Disorder" in a Greek context and the role of ICTs Technium Social Sciences Journal 33, 73-9, DOI:10.47577/tssj.v33i1.6878
- [73] Bravou V, Drigas A, 2019 A contemporary view on online and web tools for students with sensory & learning disabilities iJOE 15(12) 97 https://doi.org/10.3991/ijoe.v15i12.10833
- [74] Chaidi I, Drigas A, C Karagiannidis 2021 ICT in special education Technium Soc. Sci. J. 23, 187, https://doi.org/10.47577/tssj.v23i1.4277
- [75] Xanthopoulou M, Kokalia G, Drigas A, 2019, Applications for Children with Autism in Preschool and Primary Education. Int. J. Recent Contributions Eng. Sci. IT 7 (2), 4-16, https://doi.org/10.3991/ijes.v7i2.10335
- [76] Drigas AS, Koukianakis LG, Papagerasimou YV, 2005 A system for e-inclusion for individuals with sight disabilities Wseas transactions on circuits and systems 4 (11), 1776-1780
- [77] Stathopoulou A, Spinou D, Driga AM, 2023, Burnout Prevalence in Special Education Teachers, and the Positive Role of ICTs, iJOE 19 (08), 19-37
- [78] Stathopoulou A, Spinou D, Driga AM, 2023, Working with Students with Special Educational Needs and Predictors of Burnout. The Role of ICTs. i[OE 19 (7), 39-51
- [79] Loukeri PI, Stathopoulou A, Driga AM, 2023 Special Education Teachers' Gifted Guidance and the role of Digital Technologies, TECH HUB 6 (1), 16-27
- [80] Stathopoulou A, Temekinidou M, Driga AM, Dimitriou 2022 Linguistic performance of Students with Autism Spectrum Disorders, and the role of Digital Technologies Eximia 5 (1), 688-701
- [81] Vouglanis T, Driga AM 2023 Factors affecting the education of gifted children and the role of digital technologies. TechHub Journal 6, 28-39
- [82] Vouglanis T, Driga AM 2023 The use of ICT for the early detection of dyslexia in education, TechHub Journal 5, 54-67
- [83] Drakatos N, Tsompou E, Karabatzaki Z, Driga AM 2023 Virtual reality environments as a tool for teaching Engineering. Educational and Psychological issues, TechHub Journal 4, 59-76
- [84] Drakatos N, Tsompou E, Karabatzaki Z, Driga AM 2023 The contribution of online gaming in Engineering education, Eximia 8, 14-30
- [85] Chaidi E, Kefalis C, Papagerasimou Y, Drigas, 2021, Educational robotics in Primary Education. A case in Greece, Research, Society and Development 10 (9), e17110916371-e17110916371, https://doi.org/10.33448/rsd-v10i9.16371
- [86] Drigas, A.S., Vrettaros, J., Koukianakis, L.G. and Glentzes, J.G. (2005). A Virtual Lab and e-learning system for renewable energy sources. Int. Conf. on Educational Tech.
- [87] Lytra N, Drigas A 2021 STEAM education-metacognition–Specific Learning Disabilities Scientific Electronic Archives 14 (10) https://doi.org/10.36560/141020211442

- [88] Ntaountaki P, et all 2019 Robotics in Autism Intervention. Int. J. Recent Contributions Eng. Sci. IT 7 (4), 4-17, https://doi.org/10.3991/ijes.v7i4.11448
- [89] Demertzi E, Voukelatos N, Papagerasimou Y, Drigas A, 2018 Online learning facilities to support coding and robotics courses for youth International Journal of Engineering Pedagogy (iJEP) 8 (3), 69-80, https://doi.org/10.3991/ijep.v8i3.8044
- [90] Chaidi I, Drigas A 2022 Digital games & special education Technium Social Sciences Journal 34, 214-236 https://doi.org/10.47577/tssj.v34i1.7054
- [91] Doulou A, Drigas A 2022 Electronic, VR & Augmented Reality Games for Intervention in ADHD Technium Social Sciences Journal, 28, 159. https://doi.org/10.47577/tssj.v28i1.5728
- [92] Kefalis C, Kontostavlou EZ, Drigas A, 2020 The Effects of Video Games in Memory and Attention. Int. J. Eng. Pedagog. 10 (1), 51-61, https://doi.org/10.3991/ijep.v10i1.11290
- [93] Drigas A, Karyotaki M (2017) Attentional control and other executive functions. Int J Emerg Technol Learn iJET 12(03):219–233 https://doi.org/10.3991/ijet.v12i03.6587
- [94] Drigas A, Karyotaki M 2014. Learning Tools and Application for Cognitive Improvement. International Journal of Engineering Pedagogy, 4(3): 71-77. https://doi.org/10.3991/ijep.v4i3.3665
- [95] Drigas A., Papoutsi C. (2020). The Need for Emotional Intelligence Training Education in Critical and Stressful Situations: The Case of COVID-19. Int. J. Recent Contrib. Eng. Sci. IT 8(3), 20–35. https://doi.org/10.3991/ijes.v8i3.17235
- [96] Kokkalia, G., Drigas, A. Economou, A., & Roussos, P. (2019). School readiness from kindergarten to primary school. International Journal of Emerging Technologies in Learning, 14(11), 4-18. https://doi.org/10.3991/ijet.v14i11.10090
- [97] Papoutsi, C. and Drigas, A. (2017) Empathy and Mobile Applications. International Journal of Interactive Mobile Technologies 11(3). 57. https://doi.org/10.3991/ijim.v11i3.6385
- [98] Angelopoulou, E. Drigas, A. (2021). Working Memory, Attention and their Relationship: A theoretical Overview. Research. Society and Development, 10(5), 1-8. https://doi.org/10.33448/rsd-v10i5.15288
- [99] Drigas A, Mitsea E, Skianis C 2021 The Role of Clinical Hypnosis & VR in Special Education International Journal of Recent Contributions from Engineering Science & IT (iJES) 9(4), 4-18. https://doi.org/10.3991/ijes.v9i4.26147
- [100] V Galitskaya, A Drigas 2021 The importance of working memory in children with Dyscalculia and Ageometria Scientific Electronic Archives 14 (10) https://doi.org/10.36560/141020211449
- [101] Chaidi I, Drigas A 2020 Parents' Involvement in the Education of their Children with Autism: Related Research and its Results International Journal Of Emerging Technologies In Learning (Ijet) 15 (14), 194-203. https://doi.org/10.3991/ijet.v15i14.12509
- [102] Drigas A, Mitsea E, C Skianis 2022 Clinical Hypnosis & VR, Subconscious Restructuring-Brain Rewiring & the Entanglement with the 8 Pillars of Metacognition X 8 Layers of Consciousness X 8 Intelligences. International Journal of Online & Biomedical Engineering (IJOE) 18 (1), 78-95. https://doi.org/10.3991/ijoe.v18i01.26859
- [103] Drigas A, Karyotaki M 2019 Attention and its Role: Theories and Models. International Journal of Emerging Technologies in Learning 14 (12), 169-182, https://doi.org/10.3991/ijet.v14i12.10185
- [104] Drigas A, Karyotaki M 2019 Executive Functioning and Problem Solving: A Bidirectional Relation. International Journal of Engineering Pedagogy (iJEP) 9 (3) https://doi.org/10.3991/ijep.v9i3.10186
- [105] Bamicha V, Drigas A 2022 ToM & ASD: The interconnection of Theory of Mind with the social-emotional, cognitive development of children with Autism Spectrum Disorder. The use of ICTs as an alternative form of intervention in ASD Technium Social Sciences Journal 33, 42-72, https://doi.org/10.47577/tssj.v33i1.6845
- [106] Drigas A, Mitsea E, Skianis C. 2022 Virtual Reality and Metacognition Training Techniques for Learning Disabilities SUSTAINABILITY 14(16), 10170, https://doi.org/10.3390/su141610170
- [107] Drigas A,. Sideraki A. 2021 Emotional Intelligence in Autism Technium Soc. Sci. J. 26, 80, https://doi.org/10.47577/tssj.v26i1.5178

- [108] Drigas A, Mitsea E, Skianis C.. 2022 Subliminal Training Techniques for Cognitive, Emotional and Behavioural Balance. The role of Emerging Technologies Technium Social Sciences Journal 33, 164-186, https://doi.org/10.47577/tssj.v33i1.6881
- [109] Bakola L, Drigas A, 2020 Technological development process of emotional Intelligence as a therapeutic recovery implement in children with ADHD and ASD comorbidity. International Journal of Online & Biomedical Engineering, 16(3), 75-85, https://doi.org/10.3991/ijoe.v16i03.12877
- [110] Bamicha V, Drigas A, 2022 The Evolutionary Course of Theory of Mind Factors that facilitate or inhibit its operation & the role of ICTs Technium Social Sciences Journal 30, 138-158, DOI:10.47577/tssj.v30i1.6220
- [111] Karyotaki M, Bakola L, Drigas A, Skianis C, 2022 Women's Leadership via Digital Technology and Entrepreneurship in business and society Technium Social Sciences Journal. 28(1), 246–252. https://doi.org/10.47577/tssj.v28i1.5907
- [112] Drigas A, Bakola L, 2021The 8x8 Layer Model Consciousness-Intelligence-Knowledge Pyramid, and the Platonic Perspectives International Journal of Recent Contributions from Engineering, Science & IT (iJES) 9(2) 57-72, https://doi.org/10.3991/ijes.v9i2.22497
- [113] Drigas A, Karyotaki M, 2016 Online and Other ICT-based Training Tools for Problem-solving Skills. International Journal of Emerging Technologies in Learning 11 (6) https://doi.org/10.3991/ijet.v11i06.5340
- [114] Mitsea E, Drigas A,, Skianis C, 2022 Breathing, Attention & Consciousness in Sync: The role of Breathing Training, Metacognition & Virtual Reality Technium Social Sciences Journal 29, 79-97, https://doi.org/10.47577/tssj.v29i1.6145
- [115] Mitsea E, Drigas A, Skianis C, 2022 ICTs and Speed Learning in Special Education: High-Consciousness Training Strategies for High-Capacity Learners through Metacognition Lens Technium Soc. Sci. J. 27, 230, https://doi.org/10.47577/tssj.v27i1.5599
- [116] Drigas A, Karyotaki M, Skianis C, 2017 Success: A 9 layered-based model of giftedness International Journal of Recent Contributions from Engineering, Science & IT 5(4) 4-18, https://doi.org/10.3991/ijes.v5i4.7725
- [117] Drigas A, Papoutsi C, 2021, Nine Layer Pyramid Model Questionnaire for Emotional Intelligence, International Journal of Online & Biomedical Engineering 17 (7), https://doi.org/10.3991/ijoe.v17i07.22765
- [118] Drigas A, Papoutsi C, Skianis, 2021, Metacognitive and Metaemotional Training Strategies through the Nine-layer Pyramid Model of Emotional Intelligence, International Journal of Recent Contributions from Engineering, Science & IT (iJES) 9.4 58-76, https://doi.org/10.3991/ijes.v9i4.26189
- [119] Drigas A, Mitsea E, Skianis C, 2022 Intermittent Oxygen Fasting and Digital Technologies: from Antistress and Hormones Regulation to Wellbeing, Bliss and Higher Mental States BioChemMed 3 (2), 55-73