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**ABSTRACT OF DISSERTATION**

**MODEL OF DIFFERENTIATED LEARNING IN GREEK LANGUAGE AND  
LITERATURE FOR SECONDARY SCHOOL STUDENTS WITH DYSLEXIA**

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## Contents

INTRODUCTION.....	3
CHAPTER 1 - DYSLEXIA.....	5
1.1 Historical background and definition .....	5
1.2 Etiology .....	6
1.3 Classification and clinical characteristics.....	7
1.4 The universal and the unique character .....	8
1.5 Diagnosis .....	9
1.6 Interventions in the school and the role of the teacher .....	10
CHAPTER 2 - DIFFERENTIATED INSTRUCTION AND STUDENTS WITH DYSLEXIA .....	11
2.1 Historical background and definition .....	11
2.2 General principles and conditions of differentiation .....	11
2.3 Sectors of differentiation .....	12
2.4 Greek Language and Literature: past and current teaching approaches .....	13
2.5 Differentiated Instruction in the Classroom: strategies and techniques .....	13
2.6 Differentiated instruction and students with dyslexia: Factors influencing teachers .....	14
CHAPTER 3 - METHODOLOGY OF RESEARCH.....	16
3.1 Purpose, hypotheses and tasks.....	16
3.2 Research philosophy.....	17
3.3 Population and Sample of the research.....	18
3.4 Research tools.....	20
3.5 Research process and ethics issues.....	29
3.6 Research analysis.....	29
CHAPTER 4 - RESULTS .....	30
4.1 Results of the quantitative survey.....	30
4.2 Results of the qualitative survey.....	41
4.3 Results from the intervention .....	44
4.4 Discussions of results .....	44
CONCLUSIONS .....	48
CONTRIBUTIONS OF THE RESEARCH .....	49
RECOMMENDATIONS FOR PRACTICE .....	49
LIST OF PUBLICATIONS.....	50

## INTRODUCTION

In today's era, the educational systems of many countries are changing and upgrading with the aim of meeting the needs of all members of the school community and especially students (Hudson, Leask, & Younie, 2020). It is increasingly recognized that the student population does not consist of children with the same characteristics, abilities, skills, behaviors and needs, but they are differentiated, forming a student population of high heterogeneity (Gabaldon-Estevan, 2020). In addition, in today's schools there is a tendency to move away from the "teacher-centered model" of education towards the "student-centered model", according to which students are forced to play an active and not passive role in the process of acquiring new knowledge, since this is now accepted as increasing efficiency and learning effectiveness (Antisdel, 2015; Keiler, 2018). In this context of heterogeneous student population, there is a need for teachers not to only transfer knowledge in a standardized and sterile way, through repetition and memorization, but to recognize the uniqueness of each student, applying new effective teaching strategies, techniques and practices (Schenke et al., 2017). The ultimate goal is teaching process that meets the needs, preferences and readiness of each student.

The above shows that there is need for the implementation of differentiated instruction. This is an integrated pedagogical philosophy of high efficiency, because it allows teaching and learning taking into account the individual differences of each student (Pozas & Schneider, 2019). It implies significant benefits, because the maximum performance of each student is achieved and this corresponds to his/her own learning, behavioral and emotional profile (Naka, 2017). The application of differentiated instruction is of utmost importance during the teaching process of all the school subjects, including the teaching of language and literature (Mavroudi, 2017). This is because language is a very important tool, necessary for communication and interaction in people's daily lives, since through it, people gather information, acquire new knowledge, interact with others, integrate and evolve in society (Sirbu, 2015). In other words, language is an essential tool for the development of people, contributing to their mental, emotional and social development (Usman et al., 2022). In addition, in today's era of intense changes and digitization, language skills are gaining more and more value. However, mastering language skills is not an easy process for all the children and especially for those with special learning difficulties - dyslexia. Dyslexia is a specific language acquisition disorder that negatively affects students' abilities to read, write and decode syllables and words. Therefore, the most important deficits of children with dyslexia are related to school literacy or in other words to the abilities of writing, reading, and mathematical reasoning individually or in combination with each other (Fletcher, 2009; Leseyane et al., 2018). However, dyslexia and the deficits with which it is related, do not manifest themselves in the same way and form all the students,

because this disorder is characterized by high heterogeneity. This is a result of the unique characteristics, skills and preferences of each student with dyslexia (Zoubrinetzky, Bielle & Valdois, 2014). This uniqueness shows that it is ineffective to teach language in the same way for all children. After all, children with dyslexia often cannot respond effectively to traditional teaching strategies and techniques suggested by the curricula (Gibbs & Elliott, 2020). It is therefore necessary to differentiate teaching, so that students with dyslexia have the opportunity to acquire new skills. Only in this way the needs of students with dyslexia can be met and, in general, the goals for equal and fair learning as suggested by the philosophy of inclusive education be achieved (Rontou, 2012). In order to be implemented the above in an effective way, it is necessary that the differentiated instruction to be accepted by the teachers. Only in this way can we talk about fair and efficient education for students with dyslexia (Roiha, 2014). This is influenced by a multitude of external and internal factors related to the socio-demographic, emotional and behavioral characteristics of each teacher. In other words, not only their knowledge and abilities play an important role, but also their internal beliefs and perceptions about children with dyslexia, learning and teaching (Lavania & Mohamad, 2021). Of utmost importance is also the role of the environment and especially the school culture, which must be friendly to dyslexia (Johnson, 2008). This dissertation focuses on the Greek educational system and in particular on the teaching of the Greek language and Literature in schools. The goal is the formation of an integrated Model of differentiated learning in Greek language and literature for secondary school students with dyslexia. In particular, the dissertation investigates the differentiated teaching strategies and practices applied by Greek teachers when teaching Greek Language and Literature to secondary school students with dyslexia under the influence of a complex model of factors related to the characteristics of teachers and students, as well as of the school environment. The research findings are expected to provide guidance for improving the way students with dyslexia are taught, which will increase their quality of life.

## CHAPTER 1 - DYSLEXIA

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### 1.1 Historical background and definition

Dyslexia is a special disorder with a time-resistant and persistent character. It is related to serious difficulties in reading, but also in the use of the written word and spelling with significant negative effects both directly on the student's academic performance and indirectly on his functionality and therefore on his quality of life (Snowling, Hulme & Nation, 2020). Initially the definitions of dyslexia were based on the so-called "principle of exclusion" while the most recent definitions are more "descriptive" (Fletcher, 2009). The principle of exclusion offers the possibility exclusively for a description of dyslexia which allows on the basis of one or more justification criteria such as "intelligence adequacy", "use of conventional teaching", "social-cultural opportunities" etc. These are definitions that describe what dyslexia is not, but they do not offer the opportunity to be understood what dyslexia is and what its characteristics are. In such a context, dyslexia is understood as something negative. For this reason, the scientific community considers these definitions non-functional because they present dyslexia as a sterile disorder that manifests itself in the same pathological way in all children. They do not offer the opportunity of highlighting its heterogeneity, which today is widely known to exist. For example, when these definitions emphasize the criterion of "intelligence", there is always the risk that some children with dyslexia who grow up in deprived cultural and social contexts will eventually be excluded from diagnosis (Rutter, 1978). Also, the definitions based on the criterion of the principle of exclusion do not allow to be recognized that this disorder can exist at all mental levels, it underlines that not all children have the same level of intelligence while various cultural factors play an important role. Finally, it is underlined that these definitions, while making a connection between dyslexia and phonological ability, do not emphasize possible opportunities to acquire these abilities (Fletcher, 2009). A first definition of dyslexia formulated by the World Federation of Neurology in the USA was based on the approach of the "principle of exclusion" highlighting the concept of the unexpected of dyslexia: "*Dyslexia is the disorder that occurs in children who despite their schooling in normal school grades fail to acquire the school-related skills of reading, writing and spelling to a degree commensurate with their intellectual abilities*". This definition is not functional, since it is simply based on the description of dyslexia with a criterion of "deficiency of intelligence". This is not consistent with the school experience or useful for developing educational interventions for children with dyslexia. It also excludes children with dyslexia who have a linguistic-cultural background and their language deficit lies in the criterion of intelligence. To avoid the disadvantages of the aforementioned definitions, the scientific community is gradually focusing on the so-called descriptive definitions of dyslexia that highlight the linguistic and behavioral characteristics of children with this disorder. In other words,

these definitions describe the unexpected inherent difficulties of dyslexia in acquiring reading and writing skills. This allows linking the difficulties of children with dyslexia to school practice and therefore these are operational definitions, because they not only highlight where the dyslexia comes from, but help be created the clinical profile of the child with dyslexia (Snowling, Hulme & Nation, 2020). Descriptive definitions do not lead to a diagnostic process based on exclusion that presents dyslexia as an “impairment” for which there is no cure and therefore renounces the pedagogical role of the teacher. On the contrary, these definitions are educationally useful (Gabriel, 2018; Snowling, Hulme & Nation, 2020), because through them is given the opportunity to experts to map the characteristics of a child with dyslexia, revealing deficits due to inadequacies in language abilities despite the provision of opportunities in an educational and social context (Gabriel, 2018). This mapping of the clinical profile offers the opportunity to be developed personalized interventions which is very important. One of the foremost well-known descriptive definitions of dyslexia was developed by the British Psychological Society (BPS) which emphasizes the determined nature of dyslexia and its seriousness, whereas moreover uncovering the require for the application of instructing strategies and procedures pointed at overcoming this clutter (BPS, 1999). Another definition that is considered as descriptive is the one defined by the Worldwide Dyslexia Affiliation (IDA, 2017). According to this, dyslexia it characterizes as an extraordinary disorder with a neurobiological premise, whose startling challenges are interlaced with the precise acknowledgment and interpreting of words, whereas the commonplace challenges they are due to a shortfall in phonological dialect preparing that is regularly unforeseen in connection to other cognitive capacities and compelling classroom instruction, which straightforwardly comes about in a need of perusing comprehension and lexicon and information improvement (Thambirajah, 2010).

## **1.2 Etiology**

### **1.2.1 Neurobiological and environmental factors**

In the existing literature, various studies focus on the investigation of the structure of the brain and cerebellum of individuals with dyslexia, mainly using structural imaging tools. Most of them show dysfunctions in the areas related to phonological language skills. The etiology of dyslexia has also been linked to genetic predisposition. In particular, researches show that certain genetic types are associated with reduced reading ability. Factors related to the level of poverty and impoverishment, but also to the quality of the educational process are also factors that predict dyslexia. Another key factor is the way of teaching and the general educational opportunities offered to children with dyslexia (Fletcher, 2009).

## **1.3 Classification and clinical characteristics**

### **1.3.1 Classification**

Dyslexia is described as a “specific learning disability” in the most recent edition of the Diagnostic and Statistical Manual of Mental Disorders DSM-5 (APA, 2013), with its primary symptoms being deficits in reading ability (related to speed, accuracy, reading fluency, and comprehension) deficits in written expression (related to grammatical and spelling errors, punctuation and grammar errors, as well as disorganization of written language and expression in a written form), and deficits in mathematics (Snowling, 2013). A child is classified as having dyslexia at one of three levels, namely mild, moderate, or severe, depending on whether they have deficiencies in all three of the aforementioned categories. Mildly affected children have deficiencies in one or more of the three areas indicated above. Even without assistance, these students are adjusted well. The third level, on the other hand, includes children who are dealing with a severe specific learning challenge and deficits from the three areas with major dysfunctions. The second level, on the other hand, comprises children who have deficits that call for specialized assistance. Without the proper assistance and extra support, these children struggle greatly and are unable to handle the responsibilities of school (APA, 2013). Therefore, each child with dyslexia is unique and requires individualized care.

### **1.3.2 Clinical profile**

#### Cognitive learning

Dyslexia is linked to specific learning challenges while learning written language. As a result, challenges are related to children school literacy, particularly their reading and writing skills, as well as their capabilities in the area of mathematical software thinking (Snowling, 2013). Additionally, children with dyslexia have problems in perception, memory, but mostly in the so called phonological awareness, to varied degrees and severity (Al-Shidhani & Arora, 2012). Deficits in phonological processing, in particular, cause problems with how letters and sounds are associated as well as the process by which a child decodes the sounds of a word. Children with dyslexia have deficiencies in the aforementioned areas, which has a severe impact on their reading comprehension and spelling accuracy (Provazza, 2019; Snowling, 2003; 2013). All of these factors combine to produce written language, which is manifested in an obvious manner without being the result of a person’s sensory or mental impairment or a lack of educational opportunity. The phonological impairment is the primary issue that dyslexic youngsters experience, according to recent study (Snowling, 2003; 2013).

#### Emotional

Children who have dyslexia experience poor emotional repercussions. This is due to the fact that they continually fail in their attempts to get mastery over their writing. Negative emotions like low self-esteem, anxiety, stress, despair, anger, and frustration build up as a result of this. If not

identified and properly addressed, all of the aforementioned have a negative impact on a person's functioning both in childhood and later in life (Ghisi et al., 2016; Sako, 2016).

### Behavioral

Children with dyslexia frequently develop behavioral issues like phobias, violence, and criminal activity as a result of the bad feelings they experience. Children with dyslexia have a propensity to blame their failure on a lack of talent and their successes on pure chance, which makes it difficult for them to control their conduct. The kinematics and self-efficacy are the causes of the low self-efficacy. As a result, there is little enthusiasm for the idea, little effort, and little motivation to act. It is a weakness to motivation and self-regulated conduct with detrimental impacts on the dyslexic children's quality of life (Dahle et al., 2011).

### Social

All of the emotional issues and behavioral issues frequently result in social exclusion, which has a severe impact on the social lives of dyslexic students. More specifically, children with dyslexia may engage with others less because they feel alone or that they are not accepted by others. Adults with dyslexia endure the stigma associated with the condition, which limits their prospects for social, personal, and professional development (Ghisi et al., 2016).

### Strengths

Children with dyslexia, like all other children, have strengths in addition to deficiencies, and it is crucial to acknowledge these talents in order to create solutions that are effective. Great spatial awareness, high creativity, imagination, developed empathy, multidimensional thinking, as well as good talents and abilities in numerous domains including sports, music, and the arts are characteristics of dyslexic children (Everatt, Weeks & Brooks, 2008).

## **1.4 The universal and the unique character**

### **1.4.1 The nature of dyslexia**

The fact that dyslexia is expressed differently is one of the main reasons contributing to its heterogeneity. In addition to dividing dyslexia into acquired (acquiring difficulties in writing after brain damage) and developmental (present from birth) (Sprenger-Charolles et al., 2006), the latter is classified into two main types namely visual and auditory. These two types of dyslexia are distinct from one another in that the abnormalities in memory, perception, and discrimination in the first case are visual deficits while in the second are auditory deficits (McAnally & Castles, 2000). Additionally, there is the mixed form, which is possibly the most challenging because it combines the other two kinds (Gabay et al., 2019).



### **1.4.2 The level of dyslexia severity**

The various levels of severity of dyslexia also contribute to the variety among students with this disorder. Since the severity and presentation of symptoms vary from child to child, it can range from mild to severe (Wagner et al., 2020). Additionally, there is talk of dyslexia being reversible today due to the wealth of knowledge about the illness at the scientific and educational levels, improved teacher understanding, and more effective diagnostic and intervention tactics used (Tamboer et al., 2014).

### **1.4.3 Frequency of dyslexia**

The difference in the frequency with which dyslexia is expressed in various nations is another factor that emphasizes the distinctiveness of the disorder. This is a direct result of the different types and rates of faults that each language experiences depending on its degree of purity (Bishop & Snowling, 2004). The purity of the language emphasizes the relationship between phonemes and word graphs or visual organizers. Therefore, the frequency of dyslexia is higher in nations where the spoken language is less pure than it is in nations where the language is more pure (Sprenger-Charolles, 2011).

### **1.4.4 The role of the environment**

In addition to the aforementioned, the behavior and impacts of the environment in which the person with dyslexia acts also contribute to the varied nature of this disorder. For example, children's linguistic behaviors are a sign of dyslexia, which is caused by neurological, behavioral, and cognitive characteristics influenced by the environment, including parents and school (Knight, 2018).

### **1.4.5 Psychosynthesis/ psychopathology of children with dyslexia**

Dyslexia's feature of individuality is linked to each child's psychopathology (Zoccolotti, 2020). Consequently, depending on whether a language problem coexists with another condition, changes in the language behaviors demonstrated by each kid are seen. In fact, there is a comorbidity between learning and developmental issues, as well as with some mental disorders like attention deficit hyperactivity disorder, depression, anxiety disorders, as well as behavioral disorders, according to the literature that has already been published (Re et al., 2014).

## **1.5 Diagnosis**

The DSM-5 states that the diagnosis of specific learning disorder implies deficits in reading, specifically in terms of reading accuracy, speed, fluency, and comprehension, as well as deficits in written expression, which include errors in spelling, errors in grammar, errors in punctuation, and errors in organization. Additionally, dyscalculia or deficiencies in mathematics are mentioned. It is underlined that it is a very important fact that the term dyslexia is used for the first time in this most recent version of DSM-5 and that the deficiency in reading fluency is acknowledged as connected to the diagnosis of the home disorder (Snowling, 2013). However, it is inaccurate to say that spelling is

difficult when people with spelling issues may be highly skilled at producing written language. Spelling problems may actually represent a disorder of written expression. Additionally, reading comprehension is not specifically emphasized, despite the fact that it is now recognized as a sign of reading deficit. In other words, there is no differentiation between reading comprehension issues and issues with accuracy or fluency. However, the researcher herself emphasizes in the paper by Snowling (2013) that the issues linked to the slow rate and accuracy of reading words can eventually be a barrier to the sufficient understanding of reading. That is, reading comprehension issues may also result from phonological information impairments. However, decreased reading comprehension can occur even in the absence of poor decoding, indicating that it is frequently a different disorder—more specifically, a reading comprehension disorder—and not always dyslexia. In other words, it is designed for kids who have trouble understanding what they are reading but can correctly decode and write words (Snowling, 2013). It is clear that dyslexia is not the issue. Based on the above thorough evaluation of a child's limitations and strengths is necessary for an accurate early diagnosis of dyslexia in order to more accurately map the child's clinical profile. Since various problems, such as anxiety disorders, attention deficit hyperactivity disorder, behavioral disorders, etc., may be present or co-exist with the reading comprehension disorder that is referred, the process of distinction of dyslexia.

### **1.6 Interventions in the school and the role of the teacher**

Since each child's dyslexia manifests itself differently depending on the type, severity, frequency, diagnostic standards, timing of diagnosis, etiology, type of therapy, and the child's personality features, it was evident from the previous parts. Because every child has a unique learning pattern based on his or her own strengths, weaknesses, and learning preferences, dyslexia is distinctive and particular in nature. This individuality/uniqueness highlights the importance of considering the child's unique choices and style of thinking when developing any interventions. In other words, medication must be totally customized and tailored to each patient (Leite, 2012). It is clear that a teacher's role in assisting pupils in overcoming difficulties associated with dyslexia through the use of customized intervention is essential. The entire process is complex for him because, in order to develop and implement effective teaching strategies, he needs to be able to recognize the dyslexic child's particular linguistic behaviors as well as his particular learning style. As a result of the teacher's ongoing efforts to help the student identify his or her own strengths, weaknesses, and preferred learning style, it goes without saying that this is a dynamic process (Reid, 2019).

## **CHAPTER 2 - DIFFERENTIATED INSTRUCTION AND STUDENTS WITH DYSLEXIA**

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### **2.1 Historical background and definition**

Differentiated instruction is a comprehensive framework that includes numerous techniques to fulfill the requirements of all the students (Subban, 2006; Tomlinson & Allan, 2000). Therefore, differentiated instruction aims to develop each student's personal knowledge through fundamentally altering the way he/she learns while also taking into account his/her interests and learning preferences, as well as learning readiness (Tomlinson, 2014). In other words, differentiated instruction recognizes that it is important for every student to grow personally, cognitively, and metacognitively. This is accomplished by differentiating instructional methods, guiding concepts, and assessment strategies. Every students should receive a holistic education. As a result, elements related to the environment outside of school are just as significant as those directly related to the learning process. Differentiation is not a teaching recipe. It is an inventive teaching strategy for which there are no prefabricated solutions. Through this, equality in learning outcomes is primarily fostered, rather than just equality in students' access to teaching and learning (Naka, 2017).

### **2.2 General principles and conditions of differentiation**

To address how students are distinguished, it is vital to discuss the factors that contribute to diversity in the educational setting. The "interests", the "readiness" and the "learning profile" of the student are three crucial factors that are described in the literature as general conditions of differentiated instruction (Tomlinson et al., 2003). The degree to which a student is emotionally, mentally, physically, as well as socially prepared to accept, process, comprehend, and appropriately evaluate the stimuli of the learning and wider environment is referred to as its level of readiness for learning (Rahim, Mohd Yusoff & Abd. Latif, 2013). Vygotsky's work, particularly the theory of the "Zone of Proximal Development", is crucial for understanding the readiness component. This zone represents the gap between the child's current level of development and the prospective ability he is able to master through instruction from more competent people, according to the study. This theory holds that it is crucial that learning occurs before development, or that the teaching act (Allal & Ducrey, 2000). Students' interests and readiness levels are different as well (Tomlinson, 2013). A psychological condition in which the individual reacts emotionally and concentrates attention on certain objects, events, or ideas is the definition of interest (Linville, 2014). In this sense, a person's interaction with a particular piece of content that affects him emotionally and cognitively results in curiosity (Linville, 2014). The third and most fundamental factor that leads to the diversity of students is their learning profile, or more specifically, their learning style (Reid, 1987; Tomlinson, et al., 2003). The typology of Reid (1987) is one of the most popular and divides learning modes into visual,

auditory, and kinesthetic/tactile. A youngster with a visual learning style employs visual and sensory communication channels to effectively take in, absorb, and change environmental information (e.g. preference for visual and diagrammatic learning) (Reid, 1987).

## **2.3 Sectors of differentiation**

### Content

The differentiation of the teaching content is focused particularly on the fundamental but also metacognitive skills and abilities of the pupils. It is about presenting the material in various ways to fit the needs of all students. In terms of what the kids should learn, it amounts to differentiation. When teachers concentrate on the most crucial ideas and abilities while raising the level of learning complexity, they are differentiated in their content. Therefore, it is important to consider both what the teacher intends for the pupils to learn and how that learning will be accomplished (Roiha, 2014; Subban, 2006; Tomlinson & Allan, 2000).

### Process

The process differentiation relates to how students approach subject matter and instructional content through processing for comprehension and activities meant to assist students learn important facts, ideas, and concepts. The term “educational process” refers to all the components of a teaching act that have a certain structure and organization and support the students' engagement with the subject matter being taught, which they should process and comprehend in order to gain knowledge (Darra & Kanellopoulou, 2019; Tomlinson & Allan, 2000).

### Product

The differentiation of the product is highly significant since it is the aspect of the learning process that reflects the unique characteristics of each student while also conveying all the pertinent information about the progress of the student. Each student has a wide range of various ways to demonstrate learned material (Tomlinson & Allan, 2000; Tomlinson & Doughty, 2005).

### Learning environment

The setting in which learning takes place is crucial because it has an impact on how successful it is. For this reason, focus is now placed on creating a conducive learning environment, or, in other words, on creating a good and welcoming setting inside the classroom. Interaction, cooperation, acceptance, and respect should be the foundation of this welcoming environment so that students feel at ease and are not made to feel excluded or undervalued. Students will feel better in the classroom and be able to work more effectively if a nice learning environment is created (Thiessen, 2012).

## **2.4 Greek Language and Literature: past and current teaching approaches in the Greek Secondary school**

Greece has a centralized educational system, therefore the Ministry of Education and its specialized bodies design and control what is taught in schools. Additionally, this comprises approved texts for every topic as well as common curriculum and schedules for all public and private primary and secondary schools (Koutouzis, 2008). The language lesson, which is presented as “Modern Greek Language and Literature” is one of the lessons that are evaluated on a national level. As a result, it has a high standing on both the General Lyceum curriculum and the Professional Lyceum curriculum, where studies last three years. In order to be prepared to meet the needs of modern society, which are connected to the capacity to engage in linguistic contact with others, the lesson’s objective is for the students to develop linguistic competency and literacy abilities (Koutouzis, 2008). A review of the scientific literature reveals that the pedagogical methods used by teachers worldwide to teach the language lesson are distinguished either according to their teach-centered or their student-centered character, due to the great breadth of its teaching content (literary texts, teaching of grammar, reinforcement, and teaching of the mother tongue), and due to the objectives of the curricula of their countries (Koustourakis, 2017; Towndrow & Kwek, 2017).

## **2.5 Differentiated Instruction in the Classroom: strategies and techniques**

Student diversity encompasses various traits, including demographics, knowledge, and perceptions and it is not limited to observable characteristics like gender and ethnicity. Teachers must navigate this diversity in the classroom, which is often characterized by large class sizes, making differentiated instruction a valuable approach. Differentiated instruction is essential for addressing the varying needs of students in diverse classrooms.

Differentiated instruction in the classroom involves two key dimensions. The first dimension, pedagogical aspects, entails teachers customizing their methods and strategies to meet diverse student needs. This includes adapting content, offering multiple learning options, and modifying the pace of instruction (Coubergs et al., 2013). The second dimension, the organizational aspect, focuses on structuring differentiated instruction within the classroom. Teachers can employ macro-adaptive approaches, grouping students based on readiness or interests, or use heterogeneous grouping, where students undertake different tasks based on their abilities (Altemueller & Lindquist, 2017).

Differentiated instruction also plays a central role in various teaching models and strategies. Group-based mastery learning, for instance, involves breaking down subject matter into smaller units and providing targeted instruction to students falling below mastery criteria (Cavanagh, 2014). Additionally, for students with dyslexia facing reading and writing challenges, differentiated instruction addresses these difficulties. Teachers should identify dyslexia, assess and correct spelling,

assign differentiated homework, and provide remedial teaching in small groups or pairs. In summary, differentiated instruction adapts teaching to diverse student needs, benefiting all students, including those with dyslexia (Griva, Semoglou & Geladari, 2010; Papadopoulou, Papatzikis & Pliogou, 2015).

## **2.6 Differentiated instruction and students with dyslexia: Factors influencing teachers**

### *Diversity of students*

A group of people is said to be varied if it has individuals with a variety of traits, including those related to demographics, knowledge, perceptions, ethnicity, and nationality. The phrase has received considerable attention at the organizational/business level, where numerous studies have identified two sorts of diversity work-related diversity and demographic diversity. The first kind is obvious (e.g., gender, age), but the second type, which focuses on differences connected to people's unique characteristics, is the reverse. In contrast, other researchers identified three different types of diversity that result from differences in beliefs and perspectives, knowledge resources available (Pelled, 1996).

### *Teacher skills*

The information, abilities, and experiences that a person holds are referred to as his competences (Hager & Gonczi, 2009). Similarly, Selvi (2010) defines competences as knowledge, skills, attitudes, values, motivations and beliefs that people have to be successful at work. According to research, teachers who have received training or education in differentiated instruction are more likely to use this pedagogical strategy effectively. In other words, since differentiated teaching is a new method that demands a solid understanding of the theoretical foundations upon which it is built, training teachers in it is vitally essential. Additionally, the value of teacher preparation programs for differentiated education. Other study papers show the same thing (Karam & Mayada, 2016; Kim, Raza & Seidman, 2019; Merkt, 2017).

### *Perceived self-efficacy of teachers*

Conceptually, the term perceived self-efficacy, is defined as an individual's personal assessment of his abilities to organize and carry out a specific behavior'. This means that perceived self-efficacy does not necessarily highlight a person's real capabilities, but those that he himself perceives as having (Schmitz & Schwarzer, 2000). It is emphasized, however, that the investigation of teachers' perceived self-efficacy is considered particularly important, since it actually highlights their personal beliefs about the entire teaching practice, determining as mentions their values, behavior and decisions. Teachers' self-efficacy is based on the existence of individual theories. Among those that stand out are the theory of Rotter and the social-cognitive theory of Bandura (Denny & Bendejo, 2019).

### Beliefs about teaching

The terms perception, ideology, and philosophy are frequently used in place of the word belief. Because ideas are influenced by human actions rather than being immediately observable, it is difficult to provide a coherent explanation of them. But beliefs undeniably express how a person views himself as well as the environment in which he acts. The person's belief system serves as a personal compass, assisting him in defining and comprehending the world and himself (Prawat, 1992). The teaching philosophies of teachers can be seen in issues involving students (e.g. attitudes toward diversity), instructional elements such as curriculum, textbook content, teaching methodologies, assessment tools, the role of parents, the educational environment, and organizational aspects. These ideas are centered on three important educational issues, and especially the overarching goals of education, the nature of the teaching and the techniques/means of knowledge transfer (Prawat, 1992). This focuses on teaching-related ideas and distinguishes between constructivist teaching views and traditional teaching beliefs.

## CHAPTER 3 - METHODOLOGY OF RESEARCH

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### 3.1 Purpose, hypotheses and tasks

The purpose of the research process of the present dissertation is to be created a Model of differentiated education of secondary school dyslexic students during the teaching of the subject “Greek language and literature”. For this, differentiated teaching strategies and practices applied by Greek teachers are investigated under the influence of a complex model of factors related to the characteristics of teachers and students, as well as of the school environment.

The creating of completed Model of differentiated education of secondary school dyslexic students, presupposes the investigation of the “effective teacher” who is the one who differentiates the teaching process properly, which depends on a number of factors. Therefore, the main **scientific hypothesis** of the dissertation is that “good knowledge of dyslexia”, “perceived self-efficacy of teachers”, teachers’ “beliefs about the teaching”, “teacher pedagogical experience and training”, as well as the development of “inclusion dyslexia-friendly school culture”, contribute to the implementation of differentiated education of secondary school dyslexic students during the teaching of the subject “Greek language and literature”. This general scientific assumption is the basis to formulate **research hypotheses** to be verified in empirical research. These are:

**Hypothesis 1:** It is assumed that the application of model of differentiated teaching of the Greek language and Literature lead to improving of performance of students with dyslexia on this subject.

**Hypothesis 2:** Factors such as “good knowledge of dyslexia”, “perceived self-efficacy of teachers”, teachers’ “beliefs about the teaching”, “teacher pedagogical experience and training”, the development of “inclusion dyslexia-friendly school culture”, contribute to the implementation of differentiated education of secondary school dyslexic students during the teaching of the subject “Greek language and literature”.

In order to test the raised hypotheses, we had to test the following research questions.

**Research Question 1.** To what extent do objective independent factors, such as "gender," "age," and "educational level" of teachers, influence the frequency of application of differentiated instruction classroom strategies when teaching Greek Language and Literature to secondary school students with dyslexia?

**Research Question 2.** How does teachers' knowledge of dyslexia influence the frequency of their application of differentiated instruction classroom strategies when teaching the Greek Language and Literature to secondary school students with dyslexia?

**Research Question 3.** Does greater pedagogical experience and training among teachers lead to better knowledge of differentiated instruction and more effective implementation of corresponding strategies for students with dyslexia in the Greek Language and Literature classroom?



**Research Question 4.** How do the challenges experienced by teachers while implementing differentiated instruction affect the frequency of its application in teaching Greek Language and Literature to secondary school students with dyslexia?

**Research Question 5.** Does the perceived self-efficacy of teachers significantly influence the frequency of applying differentiated instruction classroom strategies when teaching Greek Language and Literature to secondary school students with dyslexia?

**Research Question 6.** Do teachers' beliefs about teaching methods significantly influence their knowledge and frequency of applying differentiated instruction strategies in the classroom while teaching Greek Language and Literature to secondary school students with dyslexia?

**Research Question 7.** How do environmental factors associated with school culture influence the frequency of applying differentiated instructional classroom strategies when teaching Greek Language and Literature to students?

**Research Question 8.** Does the implementation of differentiated instruction classroom strategies enhance the academic performance of students with dyslexia in the Greek Language and Literature?

For achievement of the main purpose and the verification of the research questions, the following **research tasks** are formulated:

1) Organization of a mixed type of research (quantitative and qualitative) in order the differentiated instruction strategies applied during teaching of the Greek Language and Literature to secondary school students with dyslexia.

2) Developing a quantitative research toolkit for the collection of information in regard to the social demographic characteristics of teachers, knowledge and the frequency of implementation of differentiated teaching strategies by them, as well as factors influencing the implementation of these strategies.

3) Developing of a quality tool (interview) for in-depth exploration of teachers' views about the applying of differentiated instruction strategies during teaching of the Greek Language and Literature to secondary school students with dyslexia

4) Studying of the influence of independent factors (related to both teachers, students and the school environment) on teachers' knowledge and frequency of application of differentiated instruction classroom strategies during teaching of the Greek Language and Literature to these students.

5) Highlighting differentiated instruction classroom strategies implemented by teachers' and developing proposals for improvement to create a completed Model of differentiated education of secondary school dyslexic students during the teaching of the subject "Greek language and literature".

### **3.2 Research philosophy**

The present research follows the mixed research approach, based on the methodological triangulation in order to be increased the validity and the reliability of the results, since triangulation is used to confirm a hypothesis with various methods of measurement or interpretation. In other words, the

purpose of the triangulation is to confirm (Breitmayer, Ayres & Knafl, 1993). Therefore, the confirmation of a research hypothesis through the application of a combination of different methodologies, leads to a high degree of reliability that would not be possible with the use of a single method. Thus, the disadvantages of one method are offset by the advantages of another and all together confirm the result obtained from the data. In the opposite case, that is, when a single research method is used, it is more likely to be revealed only one side of the reality of the phenomenon under study. As a result, the data reflect only one empirical dimension (Von Borries, 2019). For this reason triangulation was deemed necessary in the present study. It is emphasized that the methods chosen for triangulation must be sensitive to the phenomenon being studied and accurate (Yeasmin & Rahman, 2012). Because of that qualitative and quantitative methods produce different types of knowledge, the combination of methods used to collect qualitative and quantitative data contributes to the formation of unique knowledge on the phenomenon under study. This stems from the fact that qualitative research describes processes and the phenomenon in depth (Aspers & Corte, 2019). Quantitative research, on the other hand, provides descriptive results and information that refers to the representativeness of the sample under study (Eyisi, 2016). Together, these research methods provide information regarding the external and internal reliability of the study (Greene, Caracelli & Graham, 1989). In regard to the above, Cook & Reichardt (1979, cited in Johnson, Onwuegbuzie & Turner, L, 2007), quantitative and qualitative methodologies tend to correct, clarify, broaden and stimulate each other and in combined form triangulate in truth.

### **3.3 Population and Sample of the research**

The population of a survey consist of all the subjects who have the appropriate characteristics to be included in it. These characteristics are determined on the basis of the research aim and hypotheses. For the present study, the population consist of all the teachers who teach or have taught the Greek Language and Literature to secondary school students. These are the teachers in Secondary Education who are belonging to Branch “TIE02 Philologists” in Greece. A basic condition for the teacher to join the research is to teach/ has taught to children with dyslexia within the public Greek school (secondary education level). The sample, selected from the population offers the opportunity to be selected the necessary primary data. The following sections describe the sample on which both quantitative and qualitative research of the present study was based.

#### **3.3.1 Sampling for the quantitative approach**

The sample on which the quantitative research of the present study was based consists of a total of 109 teachers who meet the characteristics of the population, as these were described above. The teachers work or have worked in secondary schools. Random sampling was chosen as sampling method. The teachers are from schools located in the area of Arta Greece. Table 1 presents data on the profile of the quantitative research sample. Of the total of 109 teachers who participated in the quantitative research for the present dissertation, the largest percentage (71.6%) are female teachers and the rest (28.4%) are

male. Regarding the age of the participants, 28.4% are young teachers (until 30 years old). They are followed by the teachers aged 31-40 with a percentage of 22.9%, the teachers aged 41-50 with a percentage of 20.2% and the teachers aged 51-60 with a percentage of 17.4%. Only 12 teachers (17.4%) are elderly (61 and up years old). In relation to the educational level, 44.0% of the total of the participants consists of a teacher with only Bachelor degree. On the other hand, 46.8% of the teachers have Master's degree, while 11.0% have PhD's degree. A large percentage of participants (38.5%) has little teaching work experience (0-5 years). They are followed by the participants with teaching work experience 6-10 years (22.0%), 11-15 years (14.7%), 16-20 years (15.6%) and 21 and up years (9.2%). More than half of the teachers (63.3%) stated that they have training on special education, and finally, 47.7% of the participants have training on the field of differentiated instruction.

### **3.3.2 Sampling for the qualitative approach**

The sample for the qualitative research in the present study was collected through the snowball sampling method. In this context, initially 2 teachers were identified who teach Greek Language and Literature in secondary schools with a doctorate in special education and knowledge about the differentiated instruction. These teachers were asked to recommend to the researcher other teachers with similar studies, knowledge and characteristics. This process continued until 6 teachers were completed. The main goal was the sample for qualitative research to consist of teachers with knowledge of dyslexia and differentiated instruction, in order to gather in-depth primary data for the enrichment and confirmation of the results of the quantitative research. Table 1 presents data on the profile of the qualitative research sample. In more details, from the total of 6 teachers, 5 are female and only 1 male. The age of the teachers ranges between 21 and 72 years old (2 of the teachers are 31 years old, 1 is 38 years old, 1 is 42 years old and the last is 46 years old). In regard to the teaching work experience of the participants, it ranges between 9 and 20 years. Most of the participants (4 teachers) have Master's degree, while the other 2 have PhD's degree. Finally all the teachers have training on the field of special education, while 4 of the 6 teachers have training in the field of the differentiated instruction.

### **3.3.3 Characteristics of a student with dyslexia under observation**

The student under observation is 13 years old and is in the first grade of Junior High school (in Greek "Gymnasio"), belonging to the Secondary Education in Greece. He has received an official diagnosis of dyslexia while attending the 2<sup>th</sup> grade of the primary school. The student is faced with difficulties in reading, decoding the written words, spelling and comprehension of texts. At the level of oral speech he has a relatively well-developed vocabulary, but phonological awareness skills have not been mastered to a large extent. Moreover, he has difficulty with short-term memory, but has very good visual perception. He processes the written information slowly and has a moderate writing speed and accuracy. The student reads relatively slowly and in a monotonous way. There are errors in the phonology such as omission and replacement of letters and words. Reading comprehension is slow.

Finally, there are weaknesses in the production of written speech (eg structural, syntactic, spelling errors, etc.). It is emphasized, however, that this is a quiet student, with excellent skills in painting, but who has low self-esteem and receives moderate stimuli from the family and wider social environment.

### **3.4 Research tools**

#### **3.4.1 Research tool for the quantitative approach**

The questionnaire, consists of seven parts.

##### *Part I: General information*

In the *first part* of the questionnaire, there are questions about the socio-demographic characteristics of the participants (gender, age, educational level, type of teacher, work experience), as well as two questions regarding additional training in special education issues, but also on issues related to the differentiated instruction. Through the analysis of the results obtained from these questions, the profile of the sample was built. In addition, these questions were used to answer the first and third Research Questions (see Appendix I, Part I).

##### *Part II: Knowledge of dyslexia*

The second part of the questionnaire included three items from the questionnaire of Pavlidis (2000) to assess the degree to which teachers have knowledge about dyslexia. In particular, questions 6a, 7a, 10 were used. The first question explores teachers' views on whether they know well what dyslexia is. There are 4 answers available ranging from "not at all" to "very much" (Likert scale). The second question investigates whether the teacher has taught children with dyslexia. There are three available answers "yes", "no" and "I do not know". The third question investigates whether teachers are aware of the deficits of children with dyslexia. There are three answers available: "problem in speech", "problem in writing" and "both". These questions were used to answer the second Research Question (see Appendix I, Part II).

##### *Part III: Differentiated Instruction (Teachers' Differentiated Scale – T.D.S.)*

The *third part* of the questionnaire includes 65 items organized in 6 domains. This is the "Teachers' Differentiated Scale (TDS)" developed by Siam and Al-Natour (2016). In this scale the elements of the differentiated instruction identified by Tomlinson (2000), are divided into different subscales and specifically Content (15 items), Process (11 items), Teaching Resources (5 items), Outcomes (5 items), Assessment (11 items), Classroom Management (18 items) (see Appendix I, Part III). For each question, the answers are on a Likert scale of 4 levels which range from 1 = "rarely or never" to 4 = "almost always or always". This is a scale with high validity and reliability, which has been used in numerous studies in Greece and abroad. The items per sub-scale showed high internal coherence in the original study of Siam and Al-Natour (2016): content ( $\alpha = 0.934$ ); process ( $\alpha = 0.913$ ); teaching resources ( $\alpha = 0.921$ ); outcomes ( $\alpha = 0.952$ ); assessment ( $\alpha = 0.927$ ) and classroom management ( $\alpha = 0.947$ ). The TDS scale and the

corresponding results that emerged, were used to control **all the Research Questions** (from 1 to 8) of the present research, as from their grouping emerged the main “dependent variable” of the quantitative research. Moreover, in the *third part* there is also a question consist 14 items about the challenges faced by teachers in implementing the differentiated instruction. The items 5, 10,12,13,14 are reverse questions aimed at increasing reliability of the results. All the items about the challenges are also part of the “Teachers’ Differentiated Scale (TDS)” developed by Siam and Al-Natour (2016). For each question, the answers are on a Likert scale of 4 levels which range from 1 = “rarely or never” to 4 = “almost always or always”. These questions were used to answer the fourth Research Question (see Appendix I, Part III). Finally, in the *third part* of the questionnaire there is also a question consist of 19 items about the practices which teachers apply during the implementing of the differentiated instruction. These questions – practices emerged after studying the existing literature. For each question, the answers are on a Likert scale of 4 levels which range from 1 = “rarely or never” to 4 = “almost always or always”. These questions were used to answer the second Research Question (see Appendix I, Part III).

*Part IV: Perceived Self-Efficacy (Teachers’ Sense of Efficacy Scale –T.S.E.S.)*

Teachers’ perceived self-efficacy was measured using the “Teachers’ Sense of Efficacy Scale (TSES)” developed by Tschannen - Moran and Hoy (2001) (see Appendix I, Part IV). Moreover, Tsiggili (2005), weighed this scale in Greece, while its factor structure (3 factors) was confirmed in subsequent research such as that of Tsigilis et al. (2010). There are a total of 24 items for measuring perceived self-efficacy of teachers divided into three sub-scales in relation to the student involvement, the teaching strategies and the classroom management. In the present research, the short form of the scale was used as this was proposed by Tsigilis & Koustelios (2005). The short form consists of 12 items (self-efficacy in relation to student involvement questions - items 2,4,7,11; self-efficacy in relation to didactic strategic questions – items 5,9,10,12; self-efficacy in relation to classroom management items - 1, 3,6,8). For each item, the answers are on a Likert scale of 9 levels which range from 1 = “not at all” to 9 = “to a very large extent”. The items per domain showed high internal coherence in the research of Tsigilis & Koustelios (2005) and especially: first domain ( $\alpha = 0.903$ ), second domain ( $\alpha = 0.842$ ) and third domain ( $\alpha = 0.916$ ). The results from this scale were used to answer the fifth Research Question.

*Part V: Beliefs about the teaching (Teaching Beliefs Scale – T.B.S.)*

Teachers’ beliefs about teaching were measured through the “Teaching Beliefs Scale (TBS)” created by Wooley et al. (2004). It consists of 34 items divided into four subscales. Of these, only two were used. The first is regard to the beliefs - application of constructivist teaching (7 items: 1,2,3,8,9,12,14) and the second regard to the beliefs - application of traditional teaching (7 items: 4, 5, 6,7,10,11,13). The way of teaching is investigated in relation to the means of assessment, the teaching strategies, the way the school class is organized (environment), but also the observance of the curriculum. For each item, the answers are on a Likert scale of 5 levels which range from 1 = “totally disagree” to 5 = “totally agree” (see Appendix I, Part V). The other two subscales are related to the way students’ behavior is managed, but also to the relationship between teachers and parents. These were not included

in the present study because the corresponding Research Question 3 focuses only on the process of “teaching”. The above have been applied in other research studies to highlight the high reliability and validity of the TBS scale (see Suprayogi et al., 2017). The purpose of this scale is to support the answer to the sixth Research Question.

*Part VI: Inclusive school culture (Index for Inclusion– I.F.I & BDA Dyslexia Friendly Quality Mark for Schools – B.D.A.)*

The sixth section of the questionnaire initially contains a question that examines whether the schools where the teachers work have developed conditions for an “*inclusive school culture*”. This is a sub-scale of the “Index for Inclusion questionnaire”. It is emphasized that the “Index for Inclusion” was constructed to guide schools in their pursuit of the goals of inclusive education. It is a guide that reviews school cultures, policies and practices, guiding, evaluating and controlling not to “punish”, but to lead the school to change for the better outcomes (Higham & Booth, 2016). The “Index for Inclusion” has been structured according to the principles of the social model that recognizes the responsibility of the school and the society in the development of students (Angelidis & Stylianou, 2011). The sub-scale “inclusion school culture” consists of 10 items. For each item, the answers are on a Likert scale of 5 levels which range from 1 = “totally disagree” to 5 = “totally agree” (see Appendix I, Part VI). Moreover, in this part there is a question consists of 18 items that examines whether the school where the teachers work is characterized as friendly to dyslexia. There are four sub-scales and especially in the form of standards for a dyslexia friendly school and especially: “leadership and management (items 1,2,3,4), “quality of learning” (items 5,6,7,8,9,10,11,12), “creating of climate of learning” (items 13,14,15) and “partnership with parents/carers” (items 16,17,18). For each item, the answers are on a Likert scale of 5 levels which range from 1 = “totally disagree” to 5 = “totally agree”. All questions come from the guide “BDA Dyslexia Friendly Quality Mark for Schools” (BDA, 2019). The items of the sixth section were used in order to answer the seventh Research Question.

*Part VII: Relationship between differentiated instructed and dyslexia*

In the final part of the question there is only one question that investigates the extent to which teachers consider that the application of differentiated teaching has a positive effect on the performance of students with dyslexia during teaching of the Greek Language and Literature. For each item, the answers are on a Likert scale of 5 levels which range from 1 = “totally disagree” to 5 = “totally agree” (see Appendix I, Part VII). The items of the eighth section were used in order to answer the seventh Research Question.

### **3.4.2 Research tools for the qualitative approach**

#### Interview

The first tool used for collecting the quality data is the interview. This is one of the most commonly used techniques in social research. Its main advantage is that it offers the opportunity for in-depth investigation of the subject under study as participants can freely express their views and experiences (Cohen & Manion, 1994). The best-known types of interviews are structured, semi-structured

and unstructured (Robson, 2002). In the first case, the researcher uses specific questions and the respondent is asked to answer by selecting from a specific list of answers. On the other hand, in semi-structured interviews the questions can be changed or even the researcher can give explanations to the respondent, if this is deemed necessary. This type of interview uses open-ended questions. Finally, in the case of non-structured interviews, the respondent is given a topic and he / she is asked to express his / her views on it. In this case the questions used are shaped according to the views of the respondent (Robson, 2002). For the purposes of this dissertation, a semi - structured interview with open - ended questions was used. This form of interview was initially considered appropriate to supplement and clarify the information obtained from the questionnaire. It provided the opportunity to provide in-depth answers about teachers' attitudes, views, beliefs and applying teaching strategies. Specific questions were identified that served as guidelines. This form of interview was chosen to avoid forcing the teacher in question to give the answers and to give them the opportunity to give answer freely. In this regard, the researcher, where necessary, differentiated the wording of the question or even asked for additional information.

The interview consists of four (4) main sections – axes (see Appendix II). In the first section, the researcher records the personal data of the respondent (gender, age, education, teaching work experience, training on special education and training on differentiated instruction), asking the appropriate questions. The remaining sections focus on different axes related to the research hypotheses and provide additional elements to the quantitative data. The *first thematic axis* concerns questions through which data are collected regarding the views of teachers for the term differentiated teaching, but also how it contributes to the management of diversity in school. In particular, teachers are asked to interpret the term diversity and how it occurs in the classrooms they teach, as well as the term differentiated teaching used to manage this diversity. The questions of the *second thematic axis* of the interview, explore the views of teachers regarding the educational needs of students with dyslexia during teaching of Greek Language and Literature and make it necessary to differentiate teaching. In particular, the aim is teachers to state their views on the educational needs that arise due to the diversity of students with dyslexia, but also to focus on the problems and challenges of students and how they affect their learning outcomes. The *third thematic axis* consists of questions that focus on the views and perceptions of teachers on how to organize and implement differentiated teaching to students with dyslexia. In particular, the questions concern the organization and implementation of the teaching content and therefore the curriculum, learning objectives and teaching materials, the organization and implementation of the teaching process and the specific differentiated strategies and techniques and the organization and implementation of the differentiated assessment. In addition, teachers were asked to respond on how they take into account the level of readiness, the learning profile and the interests of students in the organization and implementation of their teaching. Finally, teachers were asked to what extent they believe they are actually able to implement differentiated teaching strategies. The final *fourth thematic axis* contains questions to gather teachers' views on the factors that allow or prevent the organization and implementation of differentiated teaching.

In more detail, teachers are asked to answer questions related to personal factors such as training and institutional factors, the policy of the school where they work for differentiated teaching. The final question in the protocol of the semi-structured interview leaves the teachers free to add any comments they would like on the topic discussed.

### Intervention

The general educational goal of the intervention was the student with dyslexia to practice reading, but also text comprehension through the differentiation of teaching. The intervention was done through a differentiated approach in the ordinary classroom in a group

In more details:

1. The short-term goal was for the student to better master basic vocabulary knowledge such as letters, syllables, and words.
2. The medium -term goal was for the student to better understand words and sentences.
3. The long-term goal was to enhance the student's self-esteem, so that he can better develop vocabulary and text comprehension strategies.

During the implementation of the intervention, participant observation and informal diagnostic assessment were implemented. Basic Skills Checklists were used to assess student difficulties and progress after the intervention through differentiated instruction. It is a teaching program to support the student with an emphasis on academic skills in language, but also in behavior. The BSC were used to record the student's readiness in relation to the following:

1. 1<sup>st</sup> category: learning readiness
  - Oral speech
  - Mental abilities
  - Psychomobility
  - Emotional organization
2. 2<sup>nd</sup> category: Analytical Special Education Program
  - Learning readiness
  - Social skills
  - Academic skills
  - Creative activities
3. 3<sup>rd</sup> category: Specific Learning Difficulties (dyslexia)
  - Writing skills
  - Perceptual skills
  - Memory skills
  - Reading skills
  - Behavioral skills

Based on the above, during the observation period while the intervention was applied, checklists were used. Through this way, informal pedagogical evaluation was achieved. In checklists were recorded the student's learning difficulties and learning readiness before the intervention, as well as the results of the intervention. In this way a comparison was made and the effectiveness of the intervention based on differentiated teaching for a student with dyslexia was showed. The materials and means used to complete the differentiated instruction are as follows:



- Readiness books and notebooks: Related to cognitive skills (the student puts pictures in a logical order and performs activities in a logical order), emotional organization skills (the student is interested in learning, enjoys learning and expresses questions about with the lesson).
- Language book 2<sup>th</sup> grade of the secondary school and cross-curricular unified curriculum framework: They relate to reading and writing skills (the student understands different types of texts), vocabulary development skills (the student understands the meaning of words taking into account their origin, to recognize opposite and related words, to make metaphorical use of words, to understand contexts).
- Curriculum: related to reading and writing skills (the student reads a text while understanding it at the same time), vocabulary development skills (the student understands the semantic relationships of words and phrases such as synonyms, literals, metaphors, contrasts, realizes that words have many meanings, understands the productive mechanisms of language and discovers the meaning of different unknown words).
- Comprehensive special education program: related to basic academic skills in reading and writing (the student recognizes the importance of language as a primary means of communication)
- Curriculum for detecting learning difficulties: related to spelling and morphological composition skills (the student recognizes that words change in meaning when endings change), semantic skills (the student applies the appropriate ways to understand a text, as and if it connects the meaning of different parts of the text)

The intervention was completed in different steps (mini - interventions).

**1<sup>st</sup> intervention 17/1/2022:** Students work individually. Each student was given two large cards of different color. On one were written the 24 lowercase letters of the Greek alphabet in red and on the other the 24 uppercase letters in blue. Each student was given a letter and asked to draw it on a separate piece of paper adding elements so that it looks like an animal, person or object. Image was shown as an example. The student with dyslexia was given the letter “ε” [e] as this is often confused and reversed with the number “3”. At the end, each student read the letter and described the picture it was associated with. All the drawings were placed on a poster that the teacher put on the wall. The aim for the student with dyslexia was to have visual contact with the letters and to recognize – using them during the implementation of the various activities.

**2<sup>nd</sup> intervention 19/1/2022:** The children worked in pairs. Each pair was given two cards with the same syllable but reversed (e.g “σφ”[sf]– “φς”[fs]). There was a total of 24 syllables and 24 inversions. One child said out loud the first syllable and the second its inversion. They changed roles and then the children exchanged cards with syllables. The syllable pairs were placed on a large cardboard on the wall. When the student with dyslexia struggled, he was given extra time. The aim was for him to have visual contact with the syllables and to practice reading them.

**3<sup>rd</sup> intervention 24/1/2022:** Students worked in groups. Each group was given a card with words related with professions. The student with dyslexia was first asked to read the words of his group. Another child from the second group did the same. Then each group had to write a short dialogue that included the given

words. The student with dyslexia read the dialogue. Likewise, the representative of the other team. Using the “role play” technique, each group dramatized their dialogue. The aim was for the student with dyslexia to practice reading simple words that combine difficult syllables (eg “σφ” [sf], “φ” [st]).

**4<sup>th</sup> intervention 27/1/2022:** The cross-disciplinary approach was followed. The students had learned in the Informatics class to make educational tests on the <https://wordwall.net/community> website. The intervention took place in the Informatics lab. Each student was given a card with two-digit vowels (α [e], ε [i], ο [i,] ου [u], and two-digit consonants (γκ [g], γγ [g], μπ [b], τς [ts], τζ [tz], ντ [d], as well as corresponding words, and asked to create an educational activity on the website. The aim was the student with dyslexia to practice reading and using two-digit vowels and consonants

**5<sup>th</sup> intervention 31/1/2022:** Each student works individually and was given small red paper circles with diphthongs written on them, as well as a card with 5 blank words. Each student was asked to stick the appropriate diphthong circle in the appropriate space of each word. Then each child read the words he/she made. The aim was the student with dyslexia to practice reading diphthongs.

**6<sup>th</sup> intervention 31/1/2022:** Each child was given a handmade paper booklet with different dialogues. The first dialogue was about an “event on the train station”. Each child was asked to circle the symphonic complexes in the dialogue in red and then draw whatever they wished for the characters in the dialogue. Finally, the children were divided into groups and dramatized the dialogue. The aim was for the student to practice the recognition and dialogue of symphonic complexes (2 or 3 symphonic e.g. γδ [gd], βγ [vg], σσφ [ssf]).

**7<sup>th</sup> intervention 3/2/2022:** Each student, including the one with dyslexia, was given a colored paper card with 22 compound syllables (a combination of two-digit consonants and vowels in one syllable e.g. σσφα [ssfa]. Each student read syllables, after the teacher first pronounced them. The aim was the student with dyslexia to practice reading such syllables.

**8<sup>th</sup> intervention 3/2/2022:** On the wall were placed 4 colored cards with words (a total of 40 words with difficult two-digit consonants and vowels, diphthongs, but also symphonic complexes, which were written in different colors). Each students read some of the words. Where necessary, additional time was given to the student with dyslexia. The aim was the student to practice reading words with such syllables.

**9<sup>th</sup> intervention 3/2/2022:** Children were given 4 paper cards with word pairs, as well as two pages. In the first there were 4 groups of words (each with 5 words), as well as 5 sentences with spaces to place them. These are words that differ only in the first syllable. The teacher explained each word and underlined the differences. Each student read words and everyone as well as the dyslexic student were asked to fill in the sentences with the spaces. The goal is for the student with dyslexia to practice reading and using words with a different first syllable.

**10<sup>th</sup> intervention 7/2/2022:** Children were given 2 paper cards with word pairs, as well as two pages. In the first there were 2 groups of words (each with 5 words), as well as 5 sentences with spaces to place them. These are words that differ in the second or third syllable. The teacher explained each word and underlined the differences. Each student read words and everyone as well as the dyslexic student were

asked to fill in the sentences with the spaces. The goal is for the student with dyslexia to practice reading and using words with a different second or third syllable.

**11<sup>th</sup> intervention 10/2/2022:** Children were given 2 paper cards with word pairs, as well as two pages. In the first there were 2 groups of words (each with 5 words), as well as 5 sentences with spaces to place them. These are words that include syllable reversal. The teacher explained each word and underlined the differences. Each student read words and everyone as well as the dyslexic student were asked to fill in the sentences with the spaces. The goal is for the student with dyslexia to practice reading and using words with syllable reversal.

**12<sup>th</sup> intervention 14/2/2022:** Children were given 2 paper cards with word pairs, as well as two pages. In the first there were 2 groups of words (each with 5 words), as well as 5 sentences with spaces to place them. These are words writing with the same letters but differ in the tone. The teacher explained each word and underlined the differences. Each student read words and everyone as well as the dyslexic student were asked to fill in the sentences with the spaces. The goal is for the student with dyslexia to practice reading and using words writing with the same letters but differ in the tone.

**13<sup>th</sup> intervention 17/2/2022:** Children were given 4 paper cards with word pairs, as well as two pages. In the first there were 4 groups of words (each with 5 words), as well as 5 sentences with spaces to place them. These are words that sound the same but are spelled with different letters. The teacher explained each word and underlined the differences. Each student read words and everyone as well as the dyslexic student were asked to fill in the sentences with the spaces. The goal is for the student with dyslexia to practice reading and using words that sound the same but are spelled with different letters.

**14<sup>th</sup> intervention 21/2/2022:** Children were given 4 paper cards with word pairs, as well as two pages. In the first there were 4 groups of words (each with 5 words), as well as 5 sentences with sentences with spaces to place the words. These are words that differ in the middle and the last syllable. The teacher explained each word and underlined the differences. The children read the words and everyone as well as the dyslexic student were asked to fill in the sentences with the blanks. The goal is for the student with dyslexia to practice reading and using words that sound the same but have different endings (feminine singular and masculine plural).

**15<sup>th</sup> intervention 24/2/2022:** The students listened to a text from the textbook which was shown in video format. The children were divided into two groups. The first group was given half the text and the other the second. The student with dyslexia was in the first group that was given the easiest part of the text. Each group was asked to collect words that they considered unknown or difficult and describe them. Then each child described a word and tried to describe it in writing. The student with dyslexia explained it orally.

**16<sup>th</sup> intervention 28/2/2022:** Students were given an unfamiliar text other than the textbook. Each student was asked to read it. The student was given extra time. Students then worked in pairs asking each other specific comprehension questions. Finally, each pair worked separately. One person found 5 words from

the text and the second person wrote synonyms and their opposites. Then they switched roles. The teacher was constantly next to the student with dyslexia and gave guidance.

**17<sup>th</sup> intervention 3/3/2022:** The students were divided into groups. A text was given which, after reading, each group had to define a title and make a conceptual map with words - derivatives. The student with dyslexia, as he had very good drawing skills, drew a conceptual map and together with the group members completed it.

**18<sup>th</sup> intervention 7/3/2022:** Students were given text with two stories and fill-in-the-blanks and asked to make a concept map with a central word. The lesson ended with an exercise to choose the correctly spelled word. The goal was for the student to learn to form families of related words.

**19<sup>th</sup> intervention 10/3/2022:** Students were given text with two stories and fill-in-the-blanks and asked to make a concept map with a central word. The lesson ended with an exercise regards words and phrases for literal and figurative meaning. The children worked in small groups.

**20<sup>th</sup> intervention 14/3/2022:** Students were given sentences with paragraphs, pictures with related sentences and words as well as exercises with gaps. Students worked in pairs. The goal was for the student to practice understanding sentences.

**21<sup>th</sup> intervention 17/3/2022:** The aim of the intervention was for the student to organize a text based on the semantic sequence. Sets of pictures were given and each group of students was asked to make a text. Discussion followed.

**22<sup>th</sup> intervention 24/3/2022:** The aim was for the student to practice understanding the text. Students worked in groups. Article titles for text-based matching and words for word-to-definition matching were given.

**23<sup>th</sup> intervention 28/3/2022:** The goal was for the student to practice text organization. Each group of students read and studied a text. She then created a concept map that described and colored related cards with words and phrases.

**24<sup>th</sup> intervention 31/3/2022:** The aim was to improve the critical thinking of the student with dyslexia. Text about the environment and comprehension questions were given on cards. The students played a card game.

**25<sup>th</sup> intervention 4/4/2022:** The aim was to strengthen the student's self-feeling for the text he is reading. Text about animals in dangerous and comprehension questions were given on cards. The students played a card game.

**26<sup>th</sup> intervention 7/4/2022:** The aim was to strengthen the student's self-feeling for the text he is reading. Text about ways to improve personality and comprehension questions were given on cards. The students played a card game.

**27<sup>th</sup> intervention 11/4/2022:** The aim was to strengthen the student's self-feeling for the text he is reading, as well as to improve his critical thinking. Text about animals to fulfill a teenager's dream and comprehension questions were given on cards. The students played a card game.

28<sup>th</sup> intervention 14/4/2022: The goal was for the student to improve his self-image. Text was given on the characteristics of a good listener and comprehension questions were given on cards. The students played a card game.

### **3.5 Research process and ethics issues**

The research process began with the selection of the quantities data. The questionnaires in the largest percentage of the sample were given electronically (the Google form was used) due to the Covid - 19 epidemic, while in a few cases the respondents had personal contact. Prior to completing the questionnaires, the teachers were informed through a cover letter regarding the main research objective, while it was additionally emphasized that the whole research process is voluntary, completely anonymous, and that the findings from the analyzes will be used exclusively to complete the research in the context of the student's doctoral studies. The data collection process started on 8/1/2022 and was completed on 5/2/2022. When the process of collecting the questionnaires was completed, the statistical analysis of the primary data began. It is emphasized that the dissertation used scales that are already weighted and come from the international literature. However, with the exception of those weighted in Greece, the rest have been created in English. As a result, they were translated using the “back - translation method” (for more information see Li & Atuahene-Gima, 2001). In particular, the scale questions were initially translated from English to Greek. The translation was done by a proficient professional in both languages. This was followed by a comparison of the version of the scales before and after the translation in order to determine if there is complete clarity in the translation. The translated questionnaires were then given to ten teachers (these teachers did not participate in the final survey). The aim was to be determined if the translated questionnaires actually expressed the meaning they were examining. The above procedure was followed to ensure the clarity, accuracy and relevance of the scale questions used in the research process. After the collection of quantitative data, the collection of qualitative data followed. The interviews were conducted in places of choice of the participants during the period 8/3/2022-30/3/2022. Specifically, the researcher met with the teachers either at their place of residence, or in the schools where they work, or through video inclination. All interviews were recorded with the consent of the participants and then their transcripts were recorded to enable the analysis of quality data. It is underlined that a pilot interview was conducted with six teachers who meet the criteria to find out if changes are needed in the interview questions. Finally, the intervention applied to the student with dyslexia lasted from 17/1/2022 to 14/4/2022.

### **3.6 Research analysis**

Statistical analysis of the data was performed using the static program SPSS. Descriptive statistical analysis was initially performed. This is a concise and effective presentation of the research data. In particular, for each of the main variables and the corresponding subscales, the following statistical measures are presented: frequency, mean, range and standard deviation. Inductive data analysis or statistical inference was then performed in order to be tested the research hypotheses. It was used different

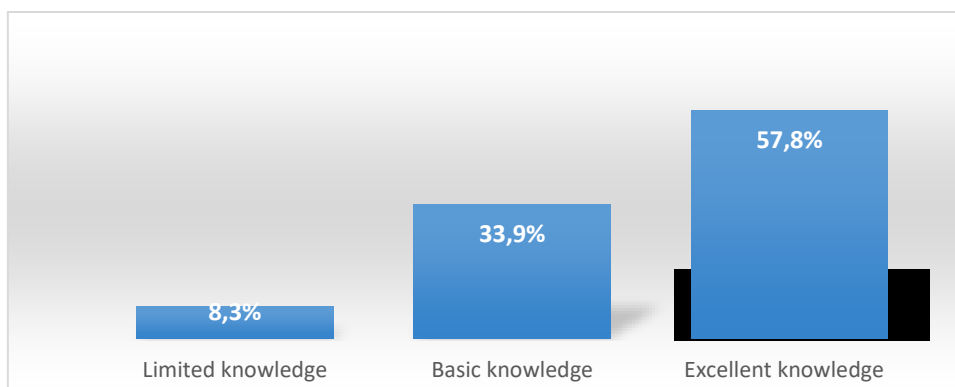
statistical techniques such as Pearson correlation, T-test, ANOVA and Regressions. In relation to the qualitative data that emerged from the interviews, the Thematic Analysis was used. In particular, the researcher was initially familiar with the data. The data was then coded through the search for meanings and patterns related to research hypotheses. Then the main issues on which the analysis was based were sought and organized.

## CHAPTER 4 - RESULTS

### 4.1 Results of the quantitative survey

#### 4.1.1 Knowledge of dyslexia

In this part, the results of the research in regard to the teachers' knowledge about dyslexia are presented (see questions from Pavlidis's, 2000 scale). Initially in regard to the question "*How well do you know what dyslexia is?*", out of the total of 109 teachers, 11 (10.1%) have given the answer "not at all", while 24 (22.0%) the answer "little". On the other hand, 48 teachers (44.0%) have "much knowledge" about this disorder and 26 (23.9%) have a "lot of knowledge". Therefore, fairly high percentage of teachers, who participated in the present research, believe that they know what dyslexia is. Regarding whether the teachers have taught to children with dyslexia, all the participants in the present research have given a positive answer for the question "*Have you ever taught to children with dyslexia?*" Finally, a high percentage of participating teachers rightly state that dyslexia is a disorder related to "writing". On the other hand, 12.8% incorrectly associate dyslexia with only "speech" problems and similarly 9.2% have given the answer "both" (speech and writing). The above teachers' responses were grouped and then coded appropriately (see 4.6 part for more information) to obtain the final grade for teachers' knowledge about dyslexia (see Diagram 1). According to the results, just over half of the participating teachers (57.8%) have "excellent knowledge" about dyslexia. On the other hand, 33.9% of the teachers have "basic knowledge" and 8.3% "limited knowledge".



*Diagram 1: Total score for teachers' knowledge of dyslexia*

#### 4.1.2 Application of differentiated instruction classroom strategies

#### ***4.1.2.1 Frequency of application of differentiated instruction***

In regard to the **first** domain of the TDS scale, which focuses on the “content” or in other words how teachers differentiate what students need to learn based on their knowledge and skills, the results show that from the total of fifteen (15) items, for the seven (7) items, the frequency of application of differentiated instruction is low. However, for the items 1, 3, 4, 7, 8, 11, 12, 13, the frequency is moderate. Therefore, the results indicate that the frequency of application of differentiated instruction in regard to the “content” is moderate and this is because while teachers place quite a lot of emphasis on the proper organization / planning of lessons, they focus to a limited extent on meeting the different needs of students. For the **second** domain of the TDS scale, which focuses on the “process” or in other words how teachers differentiate activities and means through which students will acquire the knowledge, the results show that from the total of eleven (11) items, for the six (6), the frequency of application of differentiated instruction is low. Exceptions are the items 1, 2, 5, 8, 9, where the frequency is moderate. This means that the frequency of application of differentiated instruction in regard to the “process” is moderate. This is due to the fact that teachers make some efforts to differentiate educational activities and means in order to motivate their students, but they do not focus on the individualization of the teaching process, especially with regard to students with special learning disabilities - dyslexia. In regard to the **third** domain of the TDS scale, which focuses on the “teaching resources” or in other words how teachers differentiate teaching through different type of means, the results showed that from the total of five (5) items, for the two (2), the frequency of application is low. So, the frequency of application of differentiated instruction in regard to the teaching resources is moderate. Therefore teachers rarely use technology resources for motivating students, as well as for helping them in reading, spelling and grammar. According to the results for the **fourth** domain of the TDS scale, which focuses on the “students’ outcomes” or in other words how teachers differentiate the ways of presentation of students’ productions, from the total of five (5) items, for the three (3), the frequency of application of differentiated instruction is low. Therefore, the frequency of application of differentiated instruction in regard to the students’ outcomes (productions) is not high, but moderate, because production involve a lot of learning ways such as collaborating, understanding, communicating, and not only verbal and writing presentation of knowledge. For the **fifth** domain of the TDS scale, which focuses on the “students’ assessment” or in other words how teachers differentiate the ways of assessment, the results showed that from the total of eleven (11) items, for the seven (7), the frequency of application of differentiation is low. On the other site, for the item 1, 2, 10, 10 it is high. This means that not only basic but also superior cognitive skills are assessed and therefore the frequency of application of differentiated instruction in regard to the students’ assessment is low. Finally, for the **sixth** domain of the TDS scale, which focuses on how teachers differentiate the ways of “classroom management”, the results showed that from the total of eighteen (18) items, for the ten (10), the frequency of application of differentiation is low. On the other site, for the item 3, 4, 7 and 13 the frequency is medium and for the 10, 12, 15, 17, is high. Therefore, the frequency of application of differentiated instruction in regard to the “classroom management” is moderate.

Summarizing the results of the research for the six domains of the Teachers' Differentiated Scale – TDS showed that for all the domains the differentiated instruction is applied to a moderate degree, as the value of the average values is between 1.67 and 2.33. An exception is the domain “assessment” where the average value is less than 1.66 and this shows low differentiation. In particular, on average, a moderate differentiation is applied for the domain “content” (Mean = 1.68; S.D. = 0.45). Of the total of the teachers, 29.4% differentiate the content to a very low degree, 51.4% to a moderate degree and 19.3% (only 21 teachers) to a high degree. Regarding the differentiation of the “process”, 64 teachers, a number representing 58.7% of the total sample, apply moderate differentiation, while 23.9% low and 17.4% high differentiation. Moreover, 53.2% of the teachers differentiate the “teaching resources” to a moderate degree, while 16.5% to a low degree. The number of teachers (33 people, 30.3%) who apply high differentiation in this field is increased. Similarly, 56.9% of the teachers differentiate the “outcomes” to a moderate degree and 23.9% to a high one. Only 19.3 applies low differentiation. Regarding the differentiation of the “assessment”, less than half of the teachers (46.8%) apply moderate differentiation and only 15.6% high. There is a large number of teachers who slightly differentiate the assessment (37.6%). Finally, many educators (60.6%) moderate the “classroom management” to a moderate degree, while 19.3% apply high differentiation and 20.2% low differentiation. These findings are illustrated in the Graph 4. A moderate application of differentiated instruction is revealed for all the domains and low differentiation there is for the domain “assessment”. Therefore, the lowest differentiation concerns the way/means of students' assessment. The following is the differentiation of “content”, “process”, “outcomes”, classroom management and “teaching resources”.

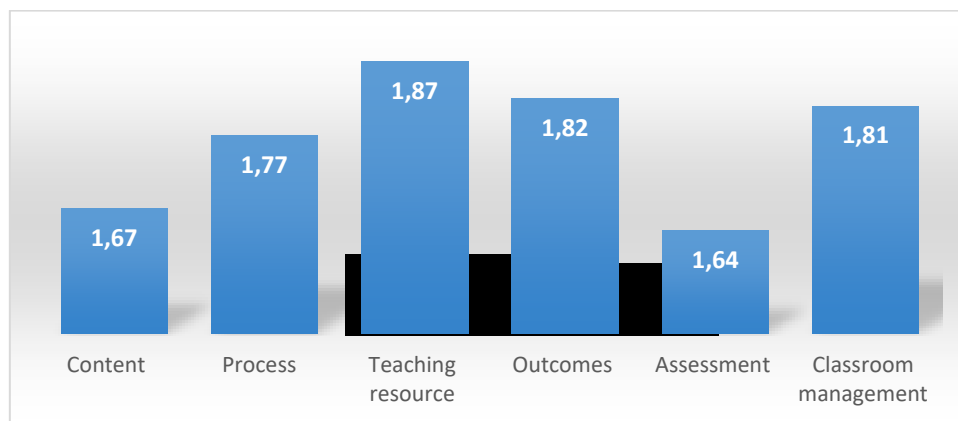


Diagram 2: Summary results for the six domains of the TDS scale

#### 4.1.2.2 Application of differentiated instruction practices

Teachers largely investigate the readiness of each student of dyslexia (39.4% often 24.8% almost always/ always) and during teaching, use examples related to students' interests (40.4% often; 19.3% almost always/ always). In addition, they focus on collaborative learning (41.3% often; 11.0% almost always/ always), offer tasks that respond to a different learning rhythm/style, (39.4% often; 11.0% almost always/ always), and apply memorization techniques (35.8% often; 11.09 almost always/ always), as well as guiding questions (51.4% often; 32.1% almost always/ always), that promote individual (42.2% often;



39.4% almost always/ always) and collaborative (36.7% often; 39.4% almost always/ always) learning. Teaching differentiation practices that focus on new techniques (34.9% often; 8.3% almost always/ always) and classroom organization are moderately applied (20.2%; often 21.2% almost always/ always). The highest average frequency of differentiation is related to the instructions given to students (Mean = 3.24) and in particular to the instructions for both individual (Mean = 3.24) and collaborative learning (Mean = 3.12). Also, teachers often check their students' level of readiness (Mean = 3.01), apply collaborative learning practices (Mean = 2.98), memorization practices (Mean = 2.79), use examples of students' interests (Mean = 2.75) and assign tasks with different learning rhythm/styles (Mean = 2.72). On average, the frequency of differentiation is moderate for the use of new technologies (Mean = 2.69), for the way of the organization of the classroom (Mean = 2.69), but also for the use of the graphic organizers (Mean = 2.52). The frequency of differentiation is very low for all the practices related to the ways through which students are evaluated and especially using of different assessment criteria (Mean = 1.69), options for different evaluation methods (Mean = 1.71), self-assessment (Mean = 1.62) and hetero-evaluation (Mean = 1.69). Finally, teachers rarely apply texts of different levels of readability (Mean = 1.98), activities with different perspectives (Mean = 1.88), manual work (Mean = 1.53) and offering different time for completing of task (Mean = 1.56).

#### ***4.1.2.3 Challenges for differentiation***

According to the research results presented in, teachers recognize the important positive role of differentiated instruction for students with dyslexia, since cumulatively 76.2% have enough conviction on the importance of the differentiated instruction in teaching. However, a very high percentage of the teachers who participated in the present research, which amounts to a cumulative 79.9% (34.9% often; 45.0% almost always/always) answered that it usually takes a lot of time for assessing the learners' needs, readiness, identification of main concepts, organizing the questions and designing activities suitable to each learner. Therefore, the time requirement for the implementation of differentiated instruction is a serious challenge for the teachers.

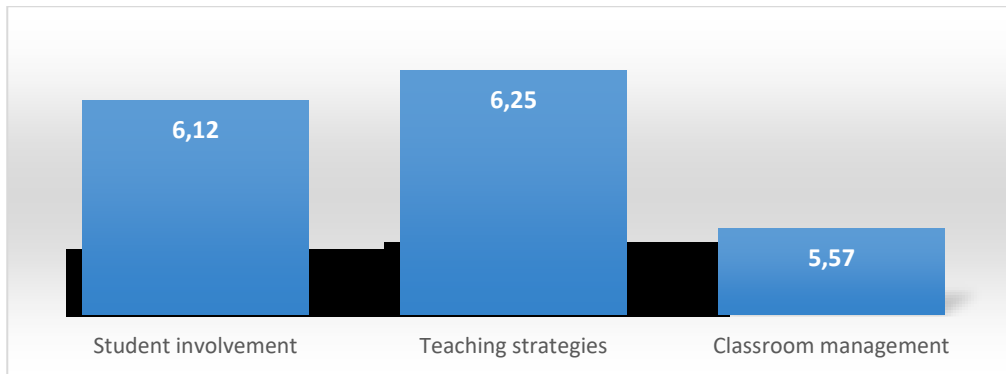
In addition, many teachers seem to have difficulty in managing the classroom during the implementation of differentiated teaching, since 28.4% have given the answer "often" and 26.6% the answer "always" in relation to this issue. The process of transforming the teacher's role from a teacher who disseminates knowledge to a facilitator is also a challenge for cumulatively 50.5% of the teachers (29.4% often; 21.1% almost always/always). There are fewer teachers who find it difficult to choose the appropriate teaching strategy when implementing differentiated teaching (19.3% often; 18.3% almost always/always). Nevertheless, cumulatively 59.6% of teachers agree that they need additional training on how to apply teaching strategies in practice (33.0% often; 26.6% almost always/always). However, the percentage of teachers who face difficulty in planning lessons when differentiating teaching is low (15.6% often; 12.8% almost always/always). It is emphasized at this point that cumulatively half of the sample considers that the main challenge is the teachers' lack of knowledge on how to implement differentiated teaching. In relation to this, 28.4% consider that they do not have the necessary skills and 20.2% that they

have minimal skills (total 48.6%). Cumulatively, however, 51.3% state that they possess the needed skills that the differentiated instruction strategy needs. Another major difficulty which poses a challenge to the implementation of differentiated instruction is the large number of students in the classroom. Specifically cumulatively, 63.3% of the teachers (38.5% often; 24.8% almost always/always) state that they find difficulties in adapting the numbers of students inside the classroom. Similarly cumulatively 64.2% of the teachers (37.6% often; 26.6% almost always/always) face difficulties in customizing the classroom in terms of size and areas to accommodate the distribution of students into working groups. An important challenge for teachers is also the lack of knowledge for the use of technology, since 27.5% state that they often face difficulties in the use of teaching aids, i.e. technology, while 26.6% have given the answer almost always/always.

Finally, a key challenge for teachers to implement differentiated instruction is the limited support from the administrative cadres. Indicatively, cumulatively 57.8% (33.0% rarely/never; 37.6% sometimes) of the teachers state that the administrative cadres rarely have sufficient convictions on the implementation of the differentiated instruction in classrooms. Also cumulatively 63.3% (25.7% rarely/never; 32.1% sometimes) state that the administrative support is rarely available by helping teachers in planning well for the curricula. Finally, cumulatively 77.6% (33.0% rarely/never; 37.6% sometimes) of the teachers have answered that rarely the administrative support is available by supporting them in front of parents / caretakers.

#### **4.1.3 Teachers' perceived self – efficiency**

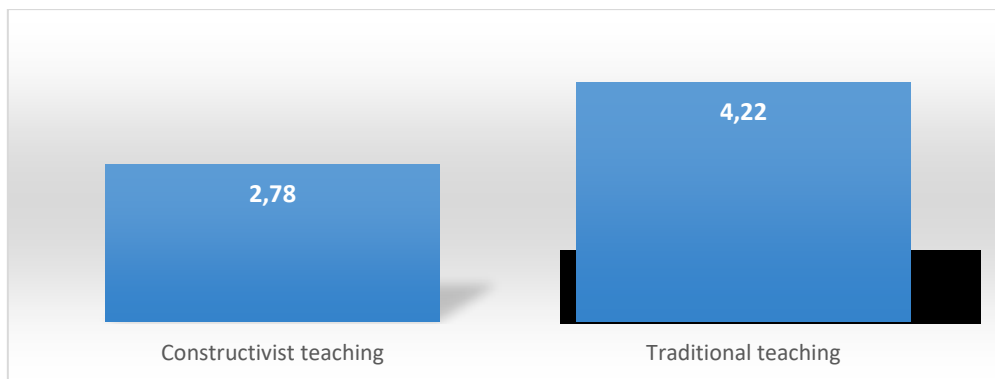
In regard to the teachers' perceived self-efficacy (see Diagrama 4) regarding the involvement of students during the teaching process, on average it is moderate to high (Mean = 6.12; S.d. = 0.560). For the teachers' perceived self-efficacy regarding the teaching strategies they apply, on average the answers is moderate to high (Mean = 6.25; S.d. = 0.578) and finally, for the teachers' perceived self-efficacy regarding their classroom management skills, on average it is moderate to low (Mean = 5.57; S.d. = 0.651). Teachers' perceived self-efficacy is moderate to high. In particular, perceived self-efficacy is higher in relation to teaching strategies (Mean = 7.12), but mainly in terms to skills of offering explanations, examples and alternative questions during the lesson and when the students do not understand it. However, the teachers seem to consider that they are lagging behind in the implementation of alternative teaching practices and especially in regards to the way of assessment where differentiation does not seem to be applied. Regarding the perceived self-efficacy for the ability to involve students, this is also satisfactory.



*Diagram 3: Teachers' perceived self – efficiency sub-scales*

#### 4.1.4 Teachers believes about teaching

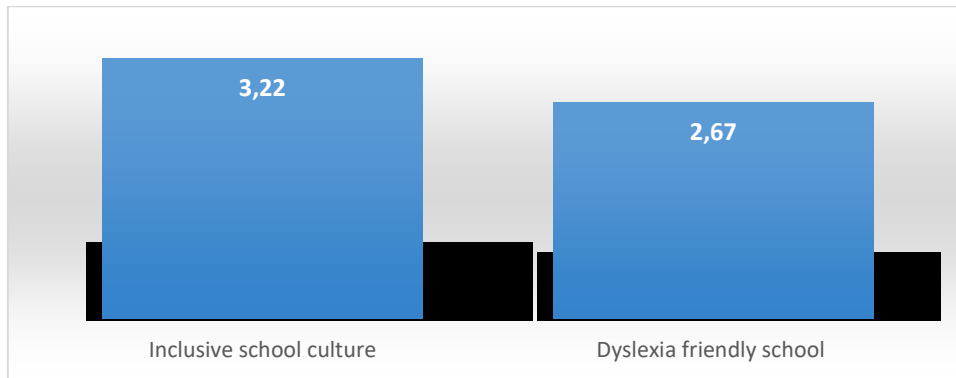
In regard to the extent to which the teachers who participated apply constructivist teaching, the results showed moderate frequency of application (Mean = 2.78; S.d. = 0.457) (see Diagram 4). On the other side, in regard to the extent to which teachers who participated apply traditional teaching, the results showed that high frequency of application on average (Mean = 4.22; S.d. = 0.555). In summary, the frequency of application of the traditional teaching is on average higher. The participating teachers largely follow the curriculum in teaching and the traditional way of approaching and evaluating students.



*Diagram 4: Teachers' believes about teaching*

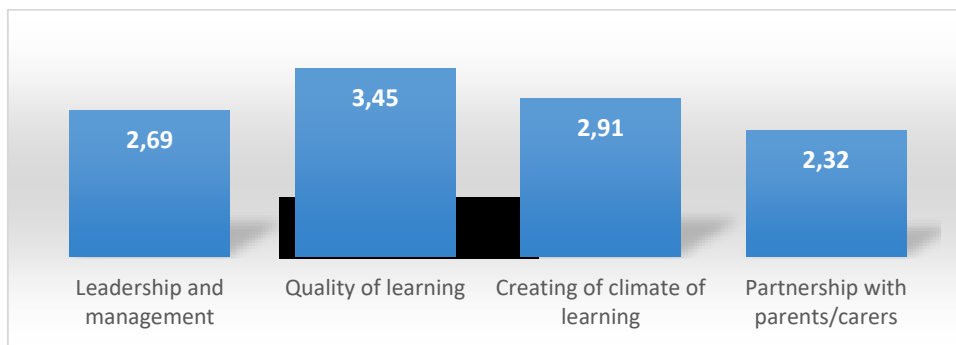
#### 4.1.5 Inclusion dyslexia friendly school culture

The participating teachers in this research consider that the schools in which they work have not yet fully developed an “inclusive culture” that promotes equal opportunities for learning for all the students, because their answers are moderate on average (Mean = 3.22). Additionally, regarding the extent to which schools function as “dyslexia-friendly”, the problem seems to be even greater, as on average the answers are around the negative position (Mean = 3.22). Combining these two dimensions, we conclude that the schools have developed “inclusion dyslexia friendly school culture” to a moderate degree (Mean = 2.67) (see Diagram 6).



*Diagram 5: Inclusion dyslexia friendly school culture*

Focusing on dyslexia-friendly schools, it is apparent that the main problem stems from the problematic collaboration between school and parents (Mean = 2.32), as well as from the lack of administrative support and the lack of appropriate organization (Mean = 2.69) for the detection and support of students with dyslexia. The suitability of the school climate for children with dyslexia is moderate (Mean = 2.91), while the quality of the teaching practices implemented by the teachers is slightly better (Mean = 3.45).



*Diagram 6: Problems*

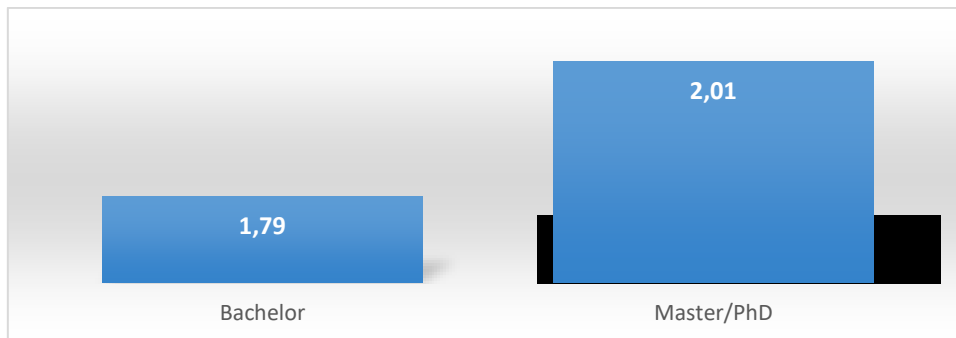
#### **4.1.6 Factors affecting the application of differentiated instruction classroom strategies**

##### **4.1.6.1 Impact of teachers' socio-demographic characteristics**

With respect to the “gender”, the t-test for independent samples (male; female), showed no statistically significant differences for all of the six domains of TDS scale (total score of TDS scale:  $t = 1.965$ ;  $\text{sig.} > 0.05$ ). Similarly, the ANOVA One – way test showed that there are no statically differences in frequency of application of differentiated instruction classroom strategies between teachers of different age groups (total score of TDS scale:  $F = 2.412$ ;  $\text{sig.} > 0.05$ ). In regard to the third objective factor, the “educational level”, the t -test for independent samples<sup>1</sup> showed statistically significant differences only for the fourth domain of TDS scale, which is the related to the “teaching resources” (see Diagram 8). Teachers with higher educational level (Master degree and / or PhD) differentiate to a greater extent the means they use during teaching (e.g. video, computers, websites, audio – visual systems books etc.) in relation to the teachers with lower educational level (Bachelor)

<sup>1</sup> The variable “educational level” were grouped into two categories (Bachelor and Master/PhD) due to the few observations in some groups.

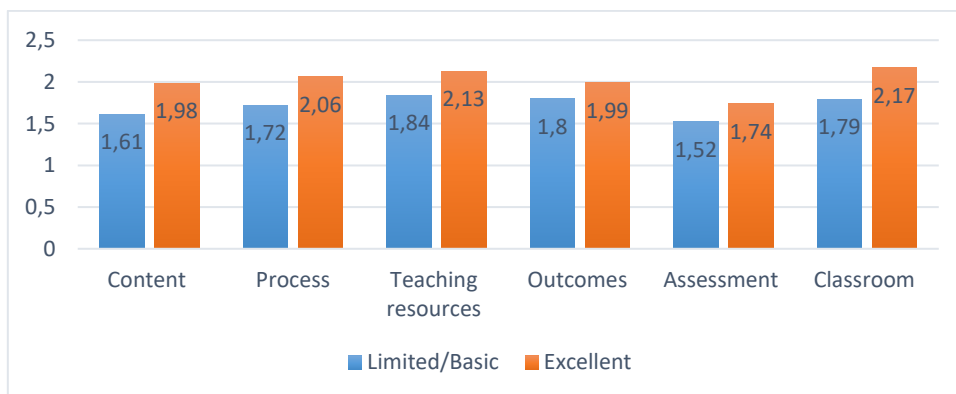
( $t = 4.989$ ;  $sig. = 0.018 < 0.05$ ). Based on the above and taking into account that only one difference in the frequency of application of differentiated instruction was appraised, we conclude that Research Question 1 is answered.



*Diagram 7: Differences in level on application of differentiated instruction in regard to the teaching resources based on teachers' educational level for the factor IV of TDS scale*

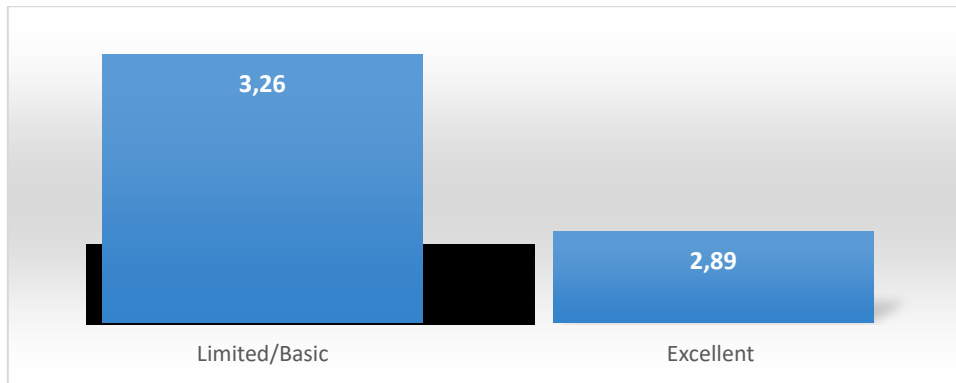
#### 4.1.6.2 Impact of knowledge of dyslexia

There are statistically significant differences in the frequency of application of differentiated instruction classroom strategies, depending on the level of teachers' knowledge about dyslexia. For all the domains of TSD scale, the value of significance is less than 0.05. Therefore, teachers with better knowledge of dyslexia apply differentiated instruction classroom strategies more often. In related to this it is noted that teachers' answers are on average more positive for them with excellent knowledge of dyslexia (see Diagram 9).



*Diagram 8: Differences in level of application of differentiated instruction classroom strategy based on teachers' knowledge of dyslexia for all the factors of TDS scale*

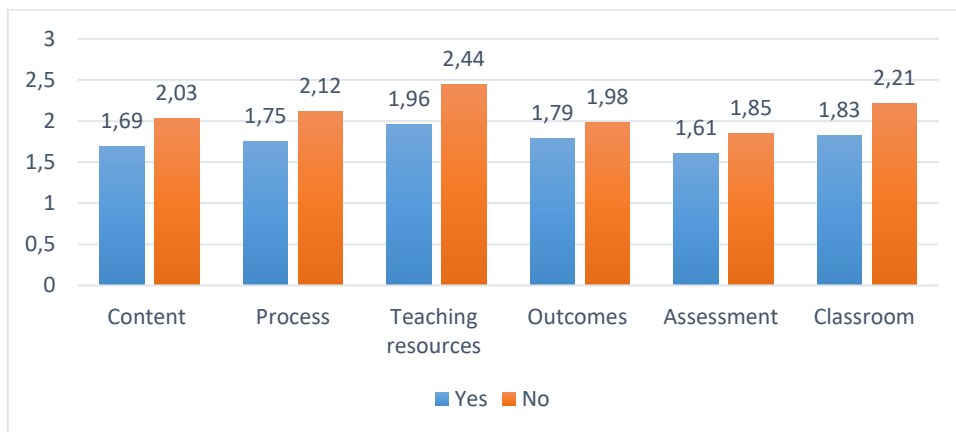
In addition, differences were observed and for the frequency of application of differentiated teaching practices. Teachers with better knowledge of dyslexia apply differentiated teaching practices more often as shown by the results of the t-test for independent samples (see Diagram 10).



*Diagram 9: Differences in level on application of differentiated instruction teaching practices based on teachers' knowledge of dyslexia*

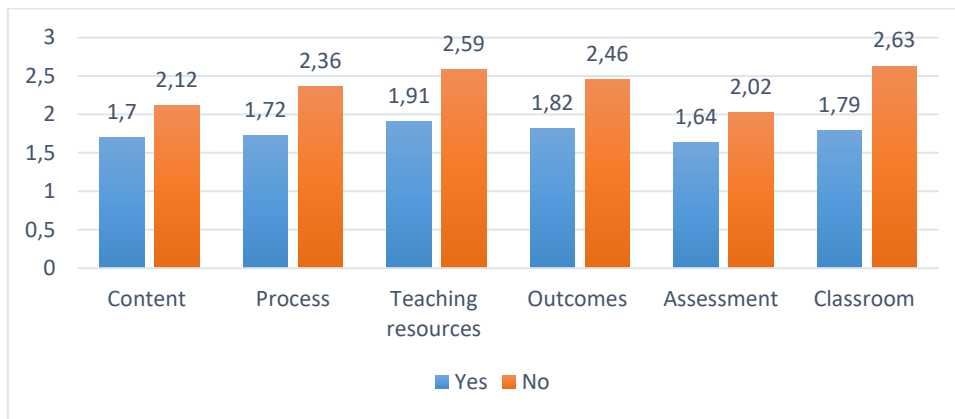
#### **4.1.6.3 Impact of pedagogical experience and training**

According to the results, there are no statistically significant differences in the frequency of application of differentiated instruction classroom strategies, depending on the teachers' pedagogical experience. For all the domains of TDS scale, the value of significance is higher than 0.05. On the other side, based on the results there are statistically significant differences in the frequency of application of differentiated instruction classroom strategies, depending on the teachers' training in the field of special education. For all the domains of TDS scale, the value of significance is less than 0.05 and it is revealed that teachers with such a training apply differentiated instruction classroom strategies more often, as their answers are on average more positive (see Diagram 11).



*Diagram 10: Differences in level of application of differentiated instruction classroom strategy based on teachers' training on special education for all the factors of TDS scale*

Similarly, the results show that there are statistically significant differences in the frequency of application of differentiated instruction classroom strategies, depending on teachers' training in the field of differentiated instruction. For all the domains of TSD scale, the value of significance is less than 0.05 and it is revealed that teachers with such a training apply differentiated instruction classroom strategies more often, as their answers are on average more positive. Based on these results we conclude that Research Question 3 is answered (see Diagram 12).



**Diagram 11: Differences in level of application of differentiated instruction classroom strategy based on teachers' training on differentiated instruction field for all the factors of TDS scale**

#### 4.1.6.4 Impact of challenges

The correlation analysis revealed statistically significant negative relationships between challenges and frequency of application of differentiated instruction, with the exception of the domain “content” ( $r = -0.263$ ;  $\text{sig} > 0.05$ ). For all the other five dimensions, there is statistically results: “process” ( $r = -0.459$ ;  $\text{sig} < 0.01$ ), “teaching resources” ( $r = -0.877$ ;  $\text{sig} < 0.01$ ), “outcomes” ( $r = -0.548$ ;  $\text{sig} < 0.01$ ), “assessment” ( $r = -0.744$ ;  $\text{sig} < 0.01$ ), “classroom management” ( $r = -0.523$ ;  $\text{sig} < 0.05$ ) and “total score” ( $r = -0.725$ ;  $\text{sig} < 0.01$ ). Based on these results we conclude that Research Question 4 is answered (see Table 1).

**Table 1: Relationship between frequency of implementation of differentiated instruction and challenges faced by teachers**

	Challenges
Content	-0,263
Process	-0.459**
Teaching resources	-0.877**
Outcomes	-0.548*
Assessment	-0.744**
Classroom management	-0.523*
<b>Total score of TDS scale</b>	<b>-0.725**</b>

\*. Correlation is significant at the 0.05 level (2-tailed).

\*\*. Correlation is significant at the 0.01 level (2-tailed).

#### 4.1.6.5 Impact of perceived self-efficacy

The correlation analysis revealed a statistically significant positive relationship between frequency of application of differentiated instruction and teachers' perceived self-efficacy in relation to their ability to involve students in teaching ( $r = 0.258$ ;  $\text{sig} < 0.05$ ). A statistically significant positive and stronger relationship was observed with the perception of self-efficacy in relation to teaching practices ( $r = 0.659$ ;  $\text{sig} < 0.01$ ). Regarding self-efficacy for classroom management skills, the relationship with differentiated instruction was positive, but not statistically significant ( $r = 0.241$ ;  $\text{sig} < 0.05$ ) (see Table 2). Based on the above results we conclude that Research Question 5 is answered.

**Table 2: Relationship between frequency of implementation of differentiated instruction and teachers' perceived self-efficiency**

<b>Self-efficacy in relation to:</b>	<b>Total score of TDS scale</b>
Student involvement	0.258*
Teaching strategies	0.659**
Classroom management	0.241
Total self-efficiency	0.536**

\*. Correlation is significant at the 0.05 level (2-tailed).

\*\*. Correlation is significant at the 0.01 level (2-tailed).

#### **4.1.6.6 Impact of beliefs about teaching**

Results of Table 3 show that the frequency of application of differentiated teaching is positively related to the positive beliefs about constructivist teaching ( $r = 0.834$ ; sig.  $<0.01$ ). This is a strong and statistically significant correlation. On the other hand, the relationship with the beliefs for traditional teaching are negatively related to the frequency of application of differentiated teaching ( $r = -0.755$ ; sig.  $<0.01$ ). Based on the above results we conclude that Research Question 6 is answered.

**Table 3: Relationship between frequency of implementation of differentiated instruction and teachers' beliefs about teaching**

	<b>Total score of TDS scale</b>
Traditional teaching practices	-0.755**
Constructivist teaching practices	0.834**

\*. Correlation is significant at the 0.05 level (2-tailed).

\*\*. Correlation is significant at the 0.01 level (2-tailed).

#### **4.1.6.7 Impact of school culture**

Results of Table 4 show that the frequency of application of differentiated teaching is positively related to the inclusive school culture ( $r = 0.821$ ; sig.  $<0.01$ ). This is a strong and statistically significant correlation. Similarly, there is the same strong positive relationship with the dyslexia friendly school culture ( $r = -0.755$ ; sig.  $<0.01$ ). Therefore, that Research Question 7 is answered.

**Table 4: Relationship between frequency of implementation of differentiated instruction and school culture**

	<b>Total score of TDS scale</b>
Inclusive school culture	0.821**
Dyslexia friendly school culture	0.822**

\*. Correlation is significant at the 0.05 level (2-tailed).

\*\*. Correlation is significant at the 0.01 level (2-tailed).

#### **4.1.6.8 Impact of all the factor: liner regression model**

The regression model explains 63.8% ( $R^2 = 0.638$ ) of the variation of frequency of application of differentiated. The following variables have a statistically significant effect: “knowledge of dyslexia” ( $\beta = 1.047$ ; sig. =  $0.001 < 0.01$ ); “teaching work experience” ( $\beta = 0.578$ ; sig. =  $0.036 < 0.05$ ), “training on special education” ( $\beta = 1.435$ ; sig. =  $0.005 < 0.01$ ), “training on differentiated instruction” ( $\beta = 1.695$ ; sig. =  $0.000 < 0.01$ ), “perceived self-efficiency” ( $\beta = 1.963$ ; sig. =  $0.009 < 0.01$ ), “constructivist teaching” ( $\beta = 1.777$ ; sig. =  $0.012 < 0.05$ ), “inclusive school culture” ( $\beta = 2.102$ ; sig. =  $0.000 < 0.01$ ), “dyslexia friendly school culture” ( $\beta = 1.365$ ; sig. =  $0.000 < 0.01$ ). The above variables were grouped into three factors that influence the frequency of application of differentiated instruction. These are “teacher personality” which



derived from the variable “self-efficacy” and “constructivist teaching” ( $\beta = 1.934$ ; sig. =  $0.000 < 0.01$ ), “teacher professionalism” which derived from the variables “knowledge of dyslexia”, “teaching work experience”, “training on special education” ( $\beta = 1.112$ ; sig. =  $0.000 < 0.01$ ) and “school environment” which derived from the variables “inclusive school culture”, “dyslexia friendly school culture” ( $\beta = 1.417$ ; sig. =  $0.000 < 0.01$ ) (see Graph 15).

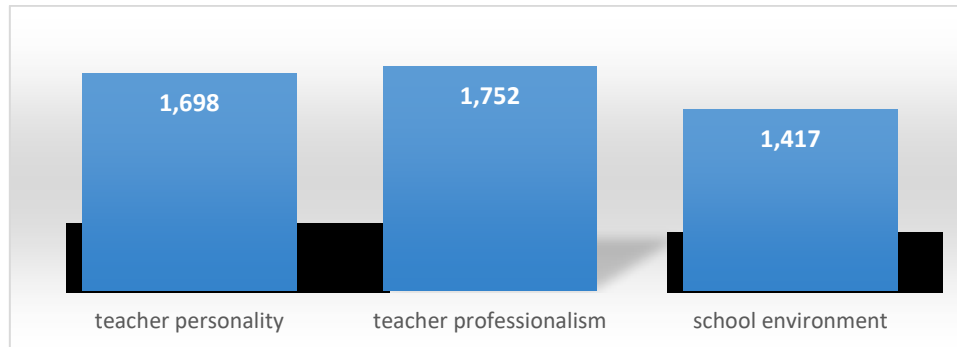


Diagram 12: Grouped independent factors that affect the frequency of application of the differentiated teaching

#### 4.1.7 Impact of differentiated instruction on performance of students with dyslexia

The results of chi – square test showed a statistically significant effect ( $\chi^2 = 5.423$ ; sig. =  $0.019 < 0.05$ ). Therefore, the Research Question 8 is answered.

### 4.2 Results of the qualitative survey

#### 4.2.1 Results from the interviews

##### 4.2.1.1 Interpretations of the term differentiated instruction

From the analysis of the data, the first “Theme” of the qualitative research emerged is related to the various interpretations given by teachers for the term “differentiated instruction”. The statements of two of the six teachers who participated in the qualitative research show that they perceive differentiated teaching as the process in which they adjust their expectations for students, depending on the level of each students’ abilities. On the other hand, two other teachers perceive the term “differentiated teaching” as a process of gradation of the activities given during the teaching of Greek Language and Literature. In other words, they liken differentiated instruction to the prioritization of teaching activities and processes. For example, teacher T4 states: “*Differentiated instruction for me is graded activities for students with different abilities.*” Teacher T5 additionally gives another explanation for the term “differentiated instruction”, likening it to individualized instruction and material simplification. Finally, the teacher T2, underlines that differentiated instruction means that the teacher differentiates the teaching activities, the materials and/or the methods of assessment in order to respond to all students. From the above, it can be seen that the participating teachers give different interpretations of the term differentiated teaching and in particular: 1) different teacher expectations depending on the students’ abilities 2) hierarchy of teaching activities 3) personalized instruction 4) differentiation of activities, means and assessment.

##### 4.2.1.2 Interpretations of the term students’ diversity

The second “Theme” that emerged from the qualitative analysis is related to the different interpretations of the term “student population diversity” as a basic condition for the implementation of

differentiated instruction. Two of the six participating teachers associate the students' diversity exclusively with their cultural heterogeneity. For example, teacher T4 states: "*The diversity of the students stems mainly from their cultural heterogeneity*". The remaining four teachers, however, interpret the diversity of students in relation to their different abilities which, according to the teachers, directly affect their academic performance. Therefore two components of students' diversity are evident: 1) cultural diversity and 2) mixed abilities.

#### ***4.2.1.3 Interpretations of the term dyslexia***

Four out of six teachers associate dyslexia with difficulties in the written language. Indicatively, the teacher T1 mentions: "*Children with dyslexia have difficulties mainly in the written language. They're brilliant, but they have these weaknesses.*" However, it is emphasized that the remaining two teachers express a more general view of dyslexia or in other words confuse it with generalized learning difficulties as can be seen from their statements: From the above, it can be seen that the participating teachers give two different interpretations of the term dyslexia and in particular: 1) difficulties in writing and reading 2) generalized learning difficulties.

#### ***4.2.1.4 Effects of dyslexia***

The teacher T5 states that he has taught several students with dyslexia, describing in detail the effects of this disorder. All the other teachers also report that the most important effects of dyslexia are serious problems in reading and writing, although the teacher T3 talks about and for problems in the oral language - way of expression: "Besides the others, I have also seen children with dyslexia who do not speak and express correctly." Finally, teacher T2 also refers to the secondary effects of dyslexia such as the appearance of psychopathology. From the above, it can be seen that the participating teachers refer to two categories of effects of dyslexia: 1) negative effects on language performance (writing and reading) and 2) negative effects at a cognitive level (psychopathology).

#### ***4.2.1.5 Implementing differentiated instruction for dyslexia***

It was revealed that all of the teachers recognize the need for the implementation of differentiated instruction, as well as also its benefits for students with dyslexia. The remaining four teachers also maintain a positive view of the necessity of differentiated instruction, as a key factor for the cognitive and broader development of students with dyslexia. Important is the statement of teacher T2 "dyslexia requires a different way of teaching. Basically, dyslexia is a different learning style. ", but also of T4 "dyslexia is characterized by uniqueness, so the usual way of teaching does not suit children with dyslexia". From the above, it can be seen that teachers recognize the importance - necessity of differentiated instruction for students with dyslexia. Focusing more on how these teachers finally differentiate the teaching, it is revealed that some of them differentiate the learning activities giving the students and to a certain extent the way the material is presented during the lesson (teachers T2 and T1). Another teacher, namely T5, states that he makes efforts to differentiate the teaching methods, but also the way the material is presented, so that it meets the needs of students with dyslexia. Specifically, this teacher emphasizes play

and experiential learning. No other mention was made by the remaining teachers in regard to the application of experiential learning to support students with dyslexia. According to the teacher T3, the differentiation instruction is done mainly at the beginning of the lesson when it has to be checked if the students have mastered the previous knowledge. Essentially, however, the differentiation that this teacher makes is simply to provide additional time for a student with dyslexia to answer a question. On the other hand, the T6 is the only teacher who mentions that he tries to differentiate the way the student with dyslexia is assessed for the Greek Language and Literature course. However, differentiation again focuses mainly on offering easy questions. The teacher T4 states that in order to effectively differentiate teaching for students with dyslexia, she always investigates their personal readiness and interests. Also, the same teacher (T4) reports that he often tries to give multiple tasks to different students at the same time that are related to the same concept or topic, but differ in complexity. Finally, only one teacher (T1) states that he emphasizes maintaining a friendly teaching climate in the classroom which he considers necessary for children with dyslexia. From the above, it can be seen that the teachers apply differentiated instruction focusing mainly on the “process” and minimally on the “product” and the “environment”, and not at all on the “content”.

#### ***4.2.1.6 Factors affecting the implementing of differentiated instruction for dyslexia***

Investigating whether teachers are confident that they can appropriately apply differentiated instruction and support students with dyslexia, it was found that two out of six teachers feel confident. On the other hand, the remaining four teachers seem to have reduced confidence about their abilities regarding the differentiation of teaching with the aim of effectively supporting students with dyslexia. In all cases, the problem seems to stem from a lack of knowledge, but also from limited knowledge about the needs of students with dyslexia (teacher T1). A similar opinion is expressed by the teacher T3 who also underlines the problem related to insufficient knowledge – training, while teacher T2 underlines how the problem is that in the diagnostic report the interdisciplinary team does not give additional advices to deal with the difficulties of each student with dyslexia individually. Finally, the teacher T6 agrees with the views of the aforementioned teachers. Another important factor influencing teachers decision to implement differentiated instruction for students with dyslexia is the lack of time. All the teachers who participated in the research emphasize that this is an inhibiting factor. The remaining four teachers agree and also emphasize that time is limited in relation to the requirements of the syllabus. It is also highlighted that another obstacle that according to teachers limits their ability to effectively support students with dyslexia by differentiating teaching is the lack of support from the Education Ministry, the schools counselors, and school principals. Teacher T1 also supports the above stating. On the other hand, the teacher T4 reports that she has a lot of difficulty finding material suitable for students with dyslexia during teaching the Greek language and literature lesson, while there is no support and guidance from the school symbol. Also, this teacher said that there is no support from the school principals. Another important aspect highlighted by the interview of the teacher T6 is the lack of collaboration with other teachers which also seems to discourage for effective support of students with dyslexia through differentiated instruction.

Finally, it is important to be noted that an inhibiting factor in the implementation of differentiated instruction for students with dyslexia is the lack of a friendly atmosphere in the classroom, since it seems that according to teacher T6 in some cases the other students do not leave room for such a thing.

### 4.3 Results from the intervention

From the results of the intervention, an improvement was observed in the learning readiness, in the basic language skills, but also in the perceptual skills and the memory skills of the student. Regarding the learning ability, a very large improvement was observed in mental ability, oral language, emotional organization and less in psychomotor skills.

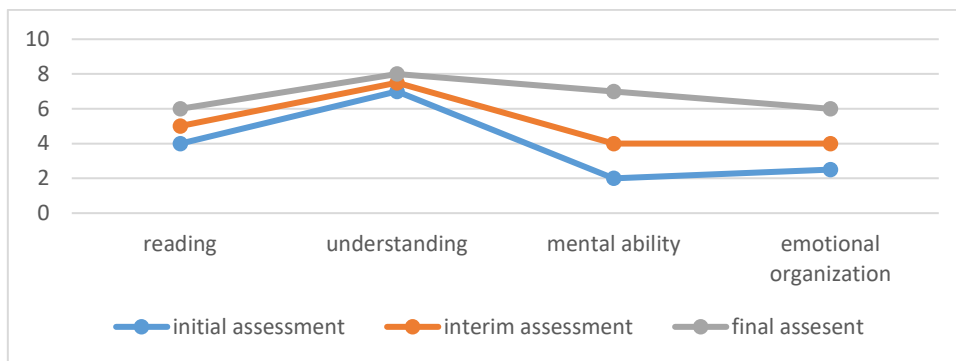


Diagram 13: Changes in learning readiness

In relation to basic language skills, a high improvement was observed in written speech and text comprehension abilities and slightly less in reading. Finally, the improvement in perception, reading and behavioral skills was high, while writing and memory skills improved to a satisfactory extent.

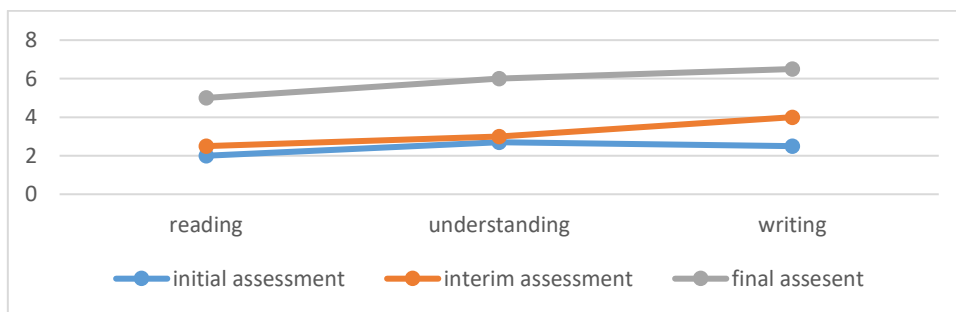


Diagram 14: Changes in basic language readiness

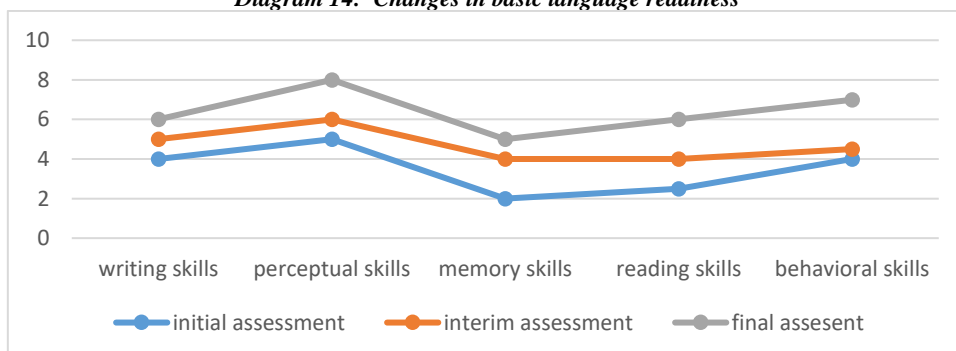


Diagram 15: Changes in perceptual and memory skills

### 4.4 Discussions of results

The purpose of the dissertation was to be created a Model of differentiated education of secondary school dyslexic students during the teaching of the subject “Greek language and literature”. For this, differentiated teaching strategies and practices applied by Greek teachers were investigated. Moreover,

the profile of the “effective teacher” who differentiates the teaching process properly was created taking into consideration a complex model of factors.

The **general scientific hypothesis** of the research is that the good knowledge of dyslexia, the perceived self-efficacy of teachers, the teachers’ beliefs about the teaching, the teachers’ pedagogical experience and training, as well as the development of inclusion dyslexia-friendly school culture, contribute to the implementation of differentiated instruction strategies during teaching of the Greek Language and Literature. This general scientific assumption was confirmed by the results as this is discussed below. One would expect that during teaching Greek Language and Literature, the frequency of differentiation instruction is much higher, precisely because these subjects are directly related to dyslexia, since students with this disorder face difficulties in reading and writing. However, the results of the present research revealed that only 20.2% of the teachers who participated, apply differentiated instruction with high frequency. More than half of the teachers (56.0%) apply this teaching strategy to a moderate degree, while in 23.9% of the cases, the frequency of application is very low. Therefore, although as mentioned in the existing literature, the differentiated instruction offers many benefits to students with dyslexia, this strategy is applied by a few teachers. It is emphasized that these findings are consistent with those of other researches (Siam, & Al-Natour, 2016; Tzanni, 2018).

In addition to the above, the results of the qualitative research show that teachers often interpret differentiated teaching in a wrong way. Instead of understanding differentiated instruction as a teaching philosophy that responds to students’ different preferences, interests, and learning readiness, they believe that differentiating instruction as having different expectations for students or simply changing the difficulty of activities evaluation. There is also confusion, as teachers often consider differentiated and individualized teaching to be the same thing. Therefore, a serious problem related to a lack of understanding of the process of differentiating teaching is revealed, which may be one of the main reasons for the low implementation. The fact that some associate the diversity of students exclusively with their cultural heterogeneity and not with the special cognitive, behavioral and emotional characteristics of each student is also added to this.

Focusing more on what the teachers finally differentiate when teaching Greek language and literature to students with dyslexia, the results showed that it is mainly the process or in other words the way in which the new knowledge is transmitted and little the content that is differentiated, but and especially the assessment methods and the teaching environment. This may be linked to the fact that the Greek education system is centralized. The teachers follow the syllabus closely and rarely vary the content of the teaching. Specific literary texts and grammar rules are taught. In addition, the way of assessment is standardized using traditional methods such as tests and writing reports. There is little or no emphasis on differentiating the evaluation process using modern methods such as self-evaluation, peer-evaluation, authentic evaluation, etc. Finally, even the differentiation of the process is limited in scope, because usually simply vary the difficulty of the tests and exercises that given to students with dyslexia. Personalization, experiential learning, team-based teaching and technological means are less often

applied, although some attempts seem to be made. All of the above is initially linked to the teachers' lack of knowledge about differentiated teaching, as it was shown that the teachers perceive the training programs as ineffective because they only focus on theoretical approaches, without offering practical examples. Therefore, teachers have difficulty or do not know to a great extent how to differentiate teaching for students with dyslexia. In fact, misinterpretations of the dyslexia disorder were also observed, because some teachers confuse it with generalized learning difficulties. Regarding the factors that affect the frequency of application of differentiated instruction, the results of the present research revealed that gender and age have no statically significant effect. In relation to the level of education, some differences were found only in terms of teaching resources. Especially, teachers with higher educational level (Master degree or PhD) differentiate to a greater extent the resources they use during teaching (e.g. video, computers, websites, audio - visual systems books etc.). This may be due to the fact that these teachers, due to their additional studies, have more knowledge about how to use the different means in order to differentiate the teaching and to respond to the needs of students with dyslexia. One of the most important factors that teachers who know well what dyslexia means differentiate teaching more often. This is probably due to the fact that these teachers are aware of the special needs of students with dyslexia and recognize the importance of differentiated instruction. **Therefore, the R.Q. 1 was answered.** This means that objective factors related to the teachers' socio-demographic characteristics have not significant impact on the frequency of application of differentiated instruction during teaching of Greek Language and Literature to secondary school students with dyslexia.

In regard to the **R.Q. 2, it was answered.** So, teachers with greater knowledge of dyslexia apply more often differentiated instruction classroom strategies and practices during teaching of Greek Language and Literature to secondary school students with the relevant disorder. This may be related to the fact that teachers who have received appropriate knowledge about dyslexia during their training or during experience with students with dyslexia, recognize the importance of differentiated teaching for the effective development of these students and therefore the apply more often. Moreover, important finding of the research is that teachers with better training on the field of special education and differentiated instruction apply more often this teaching strategy. This fact is probably due to the fact that they recognize the multiple benefits of this teaching approach and mainly know how to apply it. Therefore the **R.Q. 3 was also answered** and teachers with greater pedagogical experience and training have better knowledge of the differentiated instruction and implement more effectively corresponding strategies for students with dyslexia. The positive effect of teacher training on the application of differentiated instruction is demonstrated in a variety of other studies (Suprayogi et al., 2017). After all, in recent years there has been an increase in the participation of teachers who teach Greek Language and Literature in similar training programs. This, of course, should have led to a greater application of the differentiated instruction which is not proved by the present research. This raises questions about the effectiveness of postgraduate and research programs.

A main result of the research is that the lack of time and the pressure to adhere to the syllabus affect the frequency of differentiated instruction. Teachers in Greece are under considerable pressure to meet curriculum goals and timetables. Other similarly factors that seem to be responsible for the limited application of differentiated teaching are the lack of support both from the macro environment (Ministry of Education and diagnostic agencies), and from the micro environment since a dyslexia-friendly school culture does not seem to have been developed. Therefore the **R.Q. 4 was answered**. This means that challenges faced by teachers during the implementation of differentiated instruction have a significant negative impact on the frequency of application of this teaching strategy during teaching of the Greek Language and Literature to secondary school students with dyslexia

A key factor that the present research focused on is the perceived self-efficacy of teachers or in other words how teachers perceive their own abilities, skills and capabilities. This means that the **R.Q. 5 was answered** and teachers with positive beliefs about his ability to organize and execute teaching apply differentiated teaching strategies effectively to students with dyslexia. The perceived self-efficacy factor has been shown to play a positive role in the application of differentiated instruction, a fact that agrees with other researchers (Dixon et al., 2014). This is probably due to the fact that only the teachers who are convinced that can really differentiate the teaching practice is the one who most often applies the differentiated teaching. Often teachers teach Greek Language and Literature using standardized practices, precisely because they have low perceived self-efficacy for their skills.

Similarly, a key factor that this study focused on is the teachers' beliefs about teaching. The research findings confirmed that differentiated teaching is applied more often by teachers whose teaching decisions are guided by the philosophy of constructivism. They are the teachers who break away from the traditional teacher-centered way of transmitting knowledge, actively involving students in the teaching practice and taking into account that the acquisition of knowledge is achieved when using the previous experiences of students. After all, this development of cognitive skills can be applied during teaching of Greek Language and Literature, because this cognitive field is linked to students' daily experiences. Therefore the **R.Q. 6 was answered**, which means that the beliefs of teachers about the way of teaching have a significant impact on their knowledge and frequency of application of differentiated instruction classroom strategies during teaching of the Greek Language and Literature to secondary school students with dyslexia. So, teachers who apply constructivist teaching implement differentiated instruction strategies more effectively for students with dyslexia.

One more important result of the study is that differentiated teaching for students with dyslexia is more commonly used by teachers working in inclusive and dyslexia friendly schools. This is because in these schools, all students, including those with dyslexia, are welcomed and the goal is to better meet their educational needs. In such a school context, teachers are pushed to implement effective teaching strategies such as differentiated instruction. Therefore the **R.Q. 7 was answered**. So, in schools with inclusion dyslexia friendly school culture, teachers implement differentiated instruction strategies more effectively for students with dyslexia.

Finally, the importance of the application of differentiated teaching for children with dyslexia was also highlighted by the fact that after a relevant teaching disguise, the various strategies and practices contributed to the improvement of the language and broader skills of a student with dyslexia examined in this research. Therefore, the **R.Q. 8 was answered**, which means that differentiated instruction classroom strategies improve the reading ability of students with dyslexia.

## CONCLUSIONS

In summary, the present research revealed a low frequency of application of differentiated instruction during teaching of Greek Language and Literature for students with dyslexia. There is significant evidence that increasing this frequency in order to better meet the needs of students with dyslexia presupposes an emphasis on teachers' training, as well as enhancing their self-efficacy and their beliefs in constructivist teaching. The development of an inclusive and dyslexic-friendly school culture is also very important. Undoubtedly, differentiated teaching is an important and effective strategy for students with dyslexia, specifically when teaching Greek language and literature. Students with dyslexia indeed often have great difficulty in specific subjects precisely because they require the use of language skills (reading and writing) where these students lag behind. The teacher is the one who can contribute positively in this direction by differentiating the teaching, so as to respond to the learning ability, learning preferences and interests of each student with dyslexia. In this direction, it is necessary to implement an integrated model of support for teachers that focuses on their effective training, but also on strengthening their personal beliefs about the need for effective differentiation for the benefit of all. All of the above, of course, presupposes significant school reforms, so that they become more dyslexia-friendly. Summarizing, the first main finding of the dissertation is that the teachers apply differentiated instruction during teaching the Greek language and Literature to a limited extent. The main difference is on the teaching the process and less often in regard the the content, but also the way of evaluating the students, as well as the environment. The teaching seems to be sterile and strictly according to the syllabi, probably due to the centralized nature of the Greek educational system which leaves no room for autonomy for the teachers. Specific literary texts and grammar rules are taught. In addition, the way of assessment is standardized using traditional methods such as tests and writing reports. There is little or no emphasis on diversifying the assessment process using modern methods such as self-assessment, peer assessment, authentic assessment etc. the tests and exercises given to students with dyslexia. Personalization, experiential learning, team teaching, and technological media are less frequently implemented, although some efforts appear to be being made. Of course, a serious problem that emerged is that the teachers do not seem to have fully and correctly understood what differentiated instruction means. In other words, there is a lack of knowledge about differentiated instruction and even the disorder of dyslexia, which is another key finding of the present dissertation. The ineffectiveness of training programs is obvious, as they focus on general theoretical knowledge that is often difficult for teachers to understand and therefore largely inapplicable in practice. Another finding of the research is that the lack of support both from the



macro environment (Ministry of Education and diagnostic agencies) and from the micro environment is also responsible for the limited application of differentiated teaching, as a dyslexia-friendly school culture does not seem to have developed. One of the most important findings is that teachers with good training in special education, inclusion and differentiated teaching more often apply the teaching approach in question. Therefore, the need for effective training and education related to the above is undeniable. In addition to the training, however, teachers' beliefs about their self-efficacy, but also about constructive teaching, are also important. Finally, a key finding of the dissertation is that changes are also needed in the culture of schools that should become more dyslexia-friendly.

### **CONTRIBUTIONS OF THE RESEARCH**

In the present was created an effective model of differentiated instruction and learning for the teaching of Greek language and Literature. This model focused on the way in which Greek teachers apply differentiated instruction in this subject, but also on its frequency of application, as well as the factors that influence it. Useful evidence was revealed that shows the need for a *multi-faceted approach*, so as to be created a model of support and development of teacher with the aim of achieving effective differentiated learning from the students with dyslexia. This model could form the basis for the development of a future training program for teachers that will focus on three levels, namely *improving the theoretical and knowledge of teachers* on how to implement differentiated instruction for students with dyslexia, *strengthening the internal beliefs of teachers* with the aim of increasing their effectiveness, but also *improving the school culture* of Greek schools, so that they become more inclusive and friendly - effectively for students with dyslexia. Only in this way effective and efficient differentiated learning of Greek language and Literature for students with dyslexia, will be achieved.

Therefore, this research initially contributes to the enrichment of the existing literature regarding the implementation of differentiated instruction for students with dyslexia and the factors that influence teachers in this direction. In fact, it focuses on the course of Greek language and literature and this is important because there seems to be a relative gap in the existing bibliography. At a practical level, the present research reveals an integrated model that presents the teacher who applies differentiated teaching and can be the basis for developing appropriate educational programs.

### **RECOMMENDATIONS FOR PRACTICE**

1. Implementation of training programs that does not focus exclusively on the transmission of theoretical knowledge about dyslexia and differentiating instruction is proposed. There is a need for training with an emphasis on practical applications so that teachers gain practical knowledge. For example, classroom simulations can be done so that teachers can practice and see the results of differentiated instruction in practice.

2. Collaborations between schools both in Greece and with schools abroad are proposed for the exchange of opinions, experiences and ways of differentiating teaching with the ultimate goal of sharing good practices and professional development of teachers through reflection in professional learning communities.
3. Participation of teachers in programs of psychological empowerment and enhancement of perceived self-efficacy is proposed. These programs should take into account the needs of each teacher and have an experiential nature.
4. It is proposed to strengthen the inclusive/ dyslexic friendly nature of schools, through the development of partnerships between all members of the school community such as principals, teachers, parents, special staff and interdisciplinary team.
5. It is proposed to emphasize the early detection and investigation of the individual profile of each student with dyslexia, so that there are no delays and mistakes in the implementation of differentiated instruction for students with dyslexia.

### **LIST OF PUBLICATIONS**

1. FACTORS INFLUENCING THE IMPLEMENTATION OF DIFFERENTIATED INSTRUCTION DURING TEACHING GREEK LANGUAGE AND LITERATURE TO SECONDARY SCHOOL STUDENTS WITH DYSLEXIA

*Tsalokosta Aikaterini, PhD student c. 1240- 1253 сборник „Образование и изкуства – традиции и перспективи“, Редактор: Замфиров, М. и кол. София, УИ „Св.Кл.Охридски“, 2022, ISSN 2738-8999*

2. ОБУЧЕНИЕ ПО ГРЪЦКИ ЕЗИК И ЛИТЕРАТУРА ЧРЕЗ ПРИЛАГАНЕ НА ДИФЕРЕНЦИРАН ПОДХОД КЪМ УЧЕНИЦИ С ДИСЛЕКСИЯ В ГОРНА УЧИЛИЩНА СТЕПЕН  
LEARNING IN GREEK LANGUAGE AND LITERATURE BY APPLYING DIFFERENTIATED APPROACH TO SECONDARY SCHOOL STUDENTS WITH DYSLEXIA

*Екатерини Цалокоста, докторант, ФНОИ, СУ „Св. Климент Охридски“ Aikaterini Tsalokosta, c. 371 – 375, ОБРАЗОВАНИЕ И ИЗКУСТВА: ТРАДИЦИИ И ПЕРСПЕКТИВИ Сборник доклади от Научно-практическа конференция, посветена на 80-годишнината от рождението на проф. д-р Георги Бижков, Редактор: Замфиров, М. и кол., София, УИ „Св.Кл. Охридски“, 2020г*

3. СПЕЦИФИКИ ПРИ УЧЕБНИЯ ПРЕДМЕТ „ГРЪЦКИ ЕЗИК И ЛИТЕРАТУРА“, ИЗУЧАВАН ОТ УЧЕНИЦИ С ДИСЛЕКСИЯ В ГОРНА УЧИЛИЩНА ВЪЗРАСТ  
SPECIFICS IN SCHOOL SUBJECT GREEK LANGUAGE AND LITERATURE LEARNING BY DYSLEXIC SECONDARY SCHOOL STUDENTS

*Екатерини Цалокоста, докторант, ФНОИ, СУ „Св. Климент Охридски“ Aikaterini Tsalokosta, c. 376-379, ОБРАЗОВАНИЕ И ИЗКУСТВА: ТРАДИЦИИ И ПЕРСПЕКТИВИ Сборник доклади от Научно-практическа конференция, посветена на 80-годишнината от рождението на проф. д-р Георги Бижков, Редактор: Замфиров, М. и кол., София, УИ „Св.Кл. Охридски“, 2020г*