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## Investigating the Implementation of Universal Design for Learning in Greek Secondary and Second Chance Schools through Teachers' Reflections Dayle Learning

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**Abstract:** In the last decades, the notion of universal design for learning (UDL) has gained prominence in the Greek educational scene (former government plan in education, projects based on UDL). This educational philosophy is essentially a necessary inclusive practice given the new conditions, the extreme heterogeneity of the student population due to socio-political and economic factors, and the exceptional circumstances due to COVID-19 pandemic. The UDL aims to ensure access and equity in learning for all learners despite differentiating characteristics. With our study, we seek to investigate whether teachers in secondary and second chance schools (SCS) are ready to implement UDL, what their expectations are, what obstacles they face, and the results of implementation through their records in reflection journals, a practice that is fully consistent with the context of UDL.

**Keywords:** Greek secondary education, reflection journal, second chance schools, universal design for learning.

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### Introduction

The student population in Greece is very heterogeneous: charismatic students, students with special needs/disabilities, students with Greek as a second or foreign language, Roma students, students with excellent, mediocre, and even below-average performance, and students with wide social or financial disparities characterize the general picture of Greek schools. In this context, Greece has declared inclusion in education as a central pillar and strategic objective of the Government Program for Education (Eurydice, 2020). To ensure inclusion, especially for students with special educational needs/disabilities and children of immigrants or refugees, Greece followed the relevant legislation to establish an appropriate educational framework that recognizes Universal Design for Learning (UDL) as an appropriate and effective practice. According to the National Consultation for Special Education (7-8) of the Ministry of Education (2017), "Universal design or design for all is the systematic way of designing and providing educational tools and services so that students can make the best use of them within their functional capabilities." Universal design includes educational tools and services that are (a) directly accessible to students with disabilities or special education needs (without requiring assistive technologies) and (b) compatible with their interoperability with assistive technologies. Universal Design for Learning is a scholarly framework for educational practice that a) provides flexibility in how educational information is presented, how students respond or demonstrate their knowledge and skills, and how they engage in the learning process, and b) reduces barriers in instruction, provides appropriate supports, facilities, challenges, and supports the achievement of high expectations for all students, including those with disabilities or special education needs.

Despite accepting the UDL contribution, there is a dimension between theory and practice. This study aims to highlight the benefits of UDL and what changes are needed to talk about a more universal and effective implementation of UDL in the Greek educational system.

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### Universal Design for Learning

UDL, inspired by the movement of universal design (UD) in the field of architecture (Bjork, 2009; Hall et al., 2004; Rose & Meyer, 2002), is in fact the pedagogical framework that responds to the contemporary demand for inclusion of all students regardless of differentiating characteristics. It allows students to have equal access to learning without exclusions (Lieberman et al., 2008; Pace & Schwartz, 2008; Rose & Meyer, 2002). UDL aims to develop curricula and instruction that meet the needs of all students from all cultural backgrounds (Dymond et al., 2006; Gardener & Whittaker, 2006), students with disabilities or without disabilities (Sailor & McCart, 2014; Shogren & Wehmeyer, 2014; Thoma et al., 2009), and impact their learning experience (Al-Azawei et al., 2016). Unlike the traditional instructional model that focuses on the "typical" student, UDL addresses all students and accepts that each student learns and thinks differently and has different interests, preferences, abilities, and needs (Center for applied special technology, 2011; CAST, 2020; Rose et al., 2014).

UDL is based on three principles: 1) multiple opportunities for representation, 2) multiple opportunities for action and expression, and 3) multiple opportunities for engagement (Rose et al., 2014). According to Abascal and Civit (2001). One of the key elements of UDL is differentiation in terms of diversity and flexibility.

### The Greek Education System

In Greece, free education for all citizens is a constitutional principle. The education system is centralized under the auspices of the Ministry of Education and Religious Affairs, which regulates decisions on various issues such as curriculum content, staff recruitment, and funding (Eurydice, 2021). There are three levels of education. There is primary, secondary (gymnasio, lykeio), and tertiary, which includes lifelong learning/adult education (non-formal education). Secondary schools (SCS) are part of adult education. Although, formal education is equivalent to a Gymnasio degree. To ensure inclusion and equal opportunities for all students, there are, for example, the Educational Priority Zone, the Educational and Counseling Support Centers, and the Parallel Support.

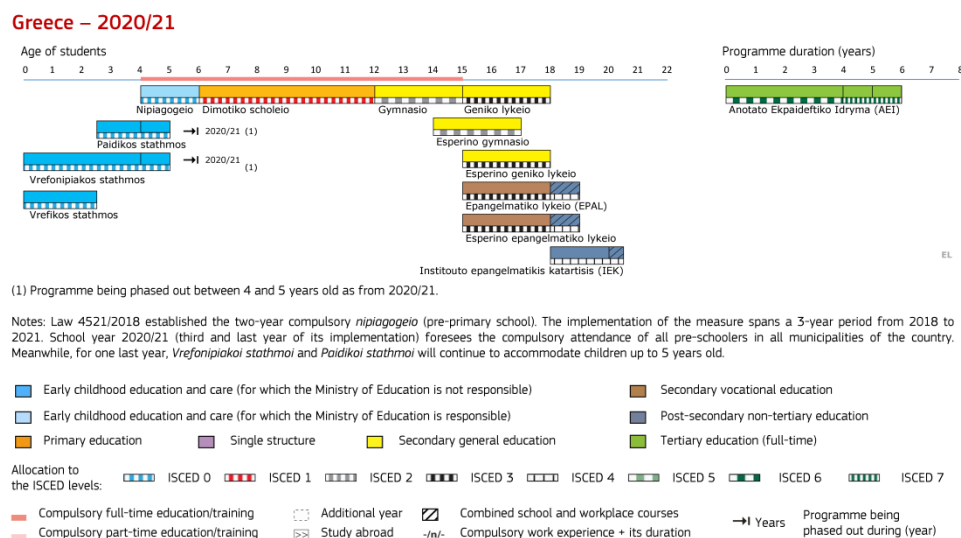


Figure 1. The Structure of the Greek Educational System.

### Reflection Journals in Education

In recent years, reflection journals have been increasingly recognized as an important tool in education. Reflection journals are a multidimensional tool that can take several forms (Boud, 2001). They promote student self-awareness and learning, teacher professional development, and teacher evaluation (Abdelhamid, 2019). The use of journaling acts as a pedagogical tool (Anderson, 2012) that, on the one hand, can help students improve their learning. On the other hand, prospective and experienced teachers can structure their teaching activities, collect data, and evaluate the effectiveness of their teaching and the overall success or failure of the teaching methods used (Di Pardo Léon-Henri, 2020). Generally, it is part of a critical analysis process and acts as an archive or mirror of pedagogical activity. It is a collection of perceptions about one's development, whether students or teachers.

### Research Focus

Regarding UDL, its implementation is generally increasing (Mangiatordi & Serenelli, 2013; Rao et al., 2014; Smith, 2012), but there is no satisfactory evidence of such growth for Greece. Only two projects have been conducted on UDL. The first one, the "UDL net", is funded by the European Union. The project site is <http://www.udlnet-project.eu>. This action lasted three years and involved seven countries, including Greece. The network aimed to develop a systematic

methodology and criteria for good practices around UDL, organize seminars, and collaborate with the participating municipalities (Giannelos & Mathioudaki, 2017). The second project, titled Universal Design and Development of Accessible Digital Education Material, under the context of the Corporate Pact for Development Framework, funded by the European Union and national financial resources, provides for the development of universally designed print and digital educational materials for students with special education needs/disabilities (Gelastopoulou & Kourbetis, 2017). The project website is <http://www.prosvasimo.gr>.

Accordingly, studies on UDL are incredibly limited in number, scope, and impact. We count only five studies by Chalkiadaki & Akogiounoglou, 2019; Chalkiadaki & Akogiounoglou, 2018; Akogiounoglou et al., 2019; Tzivinikou, 2014; Riviou et al., 2014. Chalkiadaki and Akogiounoglou (2018) conducted a pilot study on implementing UDL in music school subjects. The research was conducted in a mixed elementary school and found that through UDL implementation, students with or without special needs and students with the highest or lowest achievement were positively impacted and made the most of multiple opportunities for participation and expression remained active throughout the course. In a similar study, Chalkiadaki and Akogiounoglou (2019) concluded in a pilot study of UDL implementation in music that UDL positively impacted all students as they seemed to acquire new knowledge to a satisfactory degree, and each of them were engaged in the learning process in their way.

Akogiounoglou et al. (2019) conducted a new study that focused on the experience of UDL. Two teachers used UDL for the first time in elementary music school subjects. Specifically, they used open-ended questions to explore how UDL might be implemented, what barriers and challenges might be encountered, and what type of training is needed. They concluded that UDL is a challenging pedagogical framework for teachers in terms of time and necessary preparation, but student-centered and with the goal of equal access to learning for all students. The data analysis inferred that an acclimation period is essential for teachers and students, and adequate teacher preparation and training are required. Furthermore, the effectiveness of multiple provisions of preparation, participation, and expression in improving learning for all students was confirmed and consistent with other researchers' study findings (Capp, 2017; Rao & Torres, 2017).

Tzivinikou (2014) investigated the application of UDL in higher education. Specifically, he conducted a quasi-experimental study using a rubric based on UDL principles. The participants were first-year undergraduate students in a faculty of education in Greece. The purpose of the study was to modify key course materials to improve accessibility for students. The study results showed that all students tended to rate UDL modifications positively and that the "hindered" curricula and infrastructure prevented many students from full access to information and learning, which was also pointed out by Rose et al. (2006). The study generally indicated the need for informational materials available to them. Finally, Riviou et al. (2014) pointed out in their study of the UDL net project that it is difficult to implement UDL on a large scale because UDL requires collaborative planning among teachers with different skill sets. Due to the limited number of studies on UDL in Greek education and, in particular, the lack of relevant studies in secondary education and SCS, we focused our research on precisely these educational levels.

## Methodology

### *Research Design*

The current study adopts a case study methodology that investigates teachers' written views through reflective journals. We used qualitative interpretive research to understand the context in which participants think and act (Denzin & Lincoln, 2000; Maxwell, 1996). Based on social constructivism (Burr, 1995) and the reflective cycle Gibbs (1988), we designed two reflective journal templates (Appendix) with some guiding questions to probe teachers' reflections on the implementation of UDL in Greek secondary education and adult education, and more specifically, in SCSs. We tried, through reflective journals, to show teachers' attitudes towards UDL, their feelings, the difficulties they faced, and the results of every implementation. Therefore, teachers should have two journals. They need one during the design process of their instruction and another after the implementation.

### *Sample and Data Collection*

Twenty-five participants consented and participated voluntarily in the current study regardless of gender and specialty. Fifteen of them were secondary education teachers, and the other ten were teachers of SCS. Seven of the first 15 people were teachers of special education. We ensured that the details were anonymous, confidential, and used only for research purposes. The researchers received the necessary permission to conduct the study from the Institution of Educational Policy in Greece. Participants were informed about the voluntary nature of the research and that their responses would be anonymous and confidential. Thus, real names were replaced by a number in all journal entries. In addition, participants were informed of their right to withdraw from the study at any time and for any reason.

The participants were requested to write two anonymous reflective journals. They were to write in one while they scheduled their lesson plan and in the other after implementing their specific program. There was a restriction to include and implement a lesson plan that adopted the three basic principles of UDL. Since the participants were not familiar with writing reflective journals, there was a provision for them to be informed extensively by the researcher

before the commencement of the formal procedure. Participants answered honestly and were unbiased, since they were fully informed by the researcher and understood the importance of the survey.

Table 1. Demographic Summary of Study Participants

Pseudonym	Age	Specialty	Knowledge of UDL	Training in UDL	UDL implementation
1	40	Special education	YES	YES	YES
2	43	Special education	YES	NO	For the first time
3	42	Special education	YES	YES	For the first time
4	35	Special education	YES	YES	YES
5	37	Special education	YES	YES	YES
6	34	Special education	YES	YES	YES
7	48	Special education	YES	NO	For the first time
8	45	Teachers of SCSs	YES	NO	For the first time
9	46	Teachers of SCSs	YES	NO	For the first time
10	39	Teachers of SCSs	YES	YES	YES
11	41	Teachers of SCSs	YES	NO	For the first time
12	37	Teachers of SCSs	YES	YES	YES
13	40	Teachers of SCSs	YES	NO	YES
14	36	Teachers of SCSs	YES	YES	YES
15	46	Teachers of SCSs	YES	NO	For the first time
16	43	Teachers of SCSs	YES	NO	For the first time
17	40	Teachers of SCSs	YES	YES	YES
18	39	General education	YES	YES	YES
19	47	General education	YES	NO	For the first time
20	42	General education	YES	NO	For the first time
21	50	General education	YES	NO	For the first time
22	53	General education	YES	NO	For the first time
23	55	General education	YES	NO	For the first time
24	56	General education	YES	NO	For the first time
25	54	General education	YES	NO	For the first time

### Analyzing of Data

We analyzed the data using a comparative method to emerge themes (Creswell, 2013). We read the teacher's notes and compared them to code new data or reinforce existing codes (Creswell, 2013). For example, in the question 'planning evaluation' of the first reflective journal, the participants referred to problems and obstacles they had to face. Therefore, we coded this information as relevant data by comparing the corresponding responses from all the participants. Examining these codes, we grouped them into categories and organized the related themes. In this example, the theme was about difficulties in implementing UDL.

In conclusion, guided by research questions and Gibb's reflective cycle (1988), reflective journals were analyzed using thematic content analysis (Radnor, 2001). The analyzed data were quoted and coded. The responses were analyzed and interpreted according to the steps proposed by Creswell and Guetterman (2019). The different specialties of the sample were also taken into account. A comparison was made between journal notes based on the teacher group. For instance, was there any differentiation of attitudes among teachers of general education, special education, and teachers of SCSs?

### Findings

The data analysis revealed three themes related to the implementation of UDL in Greece, especially in secondary education and SCS. The themes were: a) the difficulties faced by teachers in UDL implementation, b) the results of UDL implementation, and c) the feelings during UDL implementation. Analysis of teachers' reflection journals revealed that teachers favored UDL as a learning practice with positive outcomes for all students. This result includes 'typical' students, students with special educational needs/disabilities, and students learning a language that is not their native language. Although they did not feel confident before implementing UDL, due to several factors, such as lack of relevant training, lack of time for lesson planning, lack of necessary resources (access to technology), unfamiliarity with the use of technology (Web 2.0), and the existing curricula in secondary education, their post-implementation records showed that their predominant feeling was satisfied with their teaching. According to their notes in their reflection diaries, there was a divergence between the views of general secondary teachers and special education/adult teachers. It was also noted that the special health conditions that forced COVID -19 distance learning, among other things, and the constraints of live teaching, such as maintaining spacing between students and not using common items, presented an additional difficulty in implementing UDL.

*Difficulties in Implementing UDL*

More specifically, general secondary teachers mentioned the following obstacles in implementing UDL: curricula required planning time, lack of pedagogical qualifications, lack of facilities (Internet, computers, and projectors), COVID-19 circumstances (distance learning, distance between students during face-to-face classes). The curriculum is the main factor that negatively affects the implementation of UDL and has been highlighted in other studies within and outside Greece (Riviou et al., 2014; Rose et al., 2006; Tzivinikou, 2014). Teachers must follow a specific program and reading materials. They cannot deviate from it. Especially in the lyceio (upper secondary), schooling is closely linked to the All-Greek examinations that allow any candidate to enter higher education. The consequence of this prevailing practice is that teachers are anxious to stick to the curriculum and refuse to implement innovative programs that do not serve the perspective of that curriculum. As a result, they run the risk of appearing incompetent. General education teachers also indicate that the lack of training and relevant experience with innovative practices prevents them from using UDL, which is also confirmed by other researchers (Riviou et al., 2014; Rose et al., 2006; Tzivinikou, 2014). They even indicated difficulty designing their lesson plan based on UDL guidelines and implementing the plan. More time was needed for the first phase of this design, and more changes were noted for future use during implementation. The plan could not be reused without the necessary changes; due to lack of experience, they could not envision this as a priority. The lack of new technologies in the infrastructure was mentioned as difficulty in implementing UDL. Teachers believe that new technologies in the digital age are a tool for implementing innovative practices, including UDL. Finally, health conditions are a universal distance education due to COVID -19. When schools first opened, strict protocols, such as spacing between students, were a real barrier to implementing UDL. This obstacle is not because UDL cannot be applied in a digital learning environment; on the contrary, the relevant literature proves otherwise (Al-Azawei et al., 2017; Baumann & Melle, 2019; Catalano, 2014; Rao, 2021; Scott & Temple, 2017). However, teachers in the sample indicated that they were expected to teach in a fully digital learning environment without appropriate information and training. Conventional teaching was difficult due to a lack of knowledge and experience. As for teaching when schools were open, the difficulty for teachers were the strict health measures that did not allow group work, cooperation, and sharing of reused materials among all students.

Special education teachers in secondary schools had fewer difficulties than general education teachers. For them, the curricula, the lack of modern technological equipment, and the pedagogical conditions created by COVID -19 acted as stumbling blocks. However, they said they were better prepared and more confident in designing and implementing their UDL-based lesson plans. Most of them have a master's degree in special education or at least annual training in the subject, making them pedagogically aware and adequate about current trends and educational philosophies. They also indicate that they are comfortable taking professional development courses to help them cope with the nature of their work, which helps to build self-confidence.

SCS teachers are the teachers who have faced the fewest obstacles in implementing UDL. The fact that there is no strict, closed curriculum that must be followed exactly has contributed to this. The curriculum, which acts more as a guide, is open and flexible. This allows teachers to try new practices more easily without the stress of finding a specific reading material, but rather use the curriculum as a reference point for the needs of adult learners. SCS teachers pointed to difficulties in implementing UDL, the lack of infrastructure for new technologies, and the special educational conditions created by the measures for COVID -19. At this point, it is worth noting that some SCS teachers pointed out, not as an obstacle but as a feature worth mentioning, that they are called to apply UDL to adults who have experienced a conservative and outdated educational system and may have been negatively evaluated and therefore have a specific idea of education. They are now called to learn about a new system that does not require them to conform to it but is tailored to their needs. This initial idea that emerged in the curriculum design has been confirmed by the program's implementation, which ensures the philosophy of the UDL itself.

Thus, as far as teachers' difficulties in implementing UDL are concerned, they are not trained and therefore not familiar with UDL principles. Consequently, implementing UDL requires more time and effort. This finding is also confirmed by the research of Cooper et al. (2008), Kumar and Wideman (2014), and Mavrou (2012). According to the relevant data, it is evident that there is a need for additional training. There needs to be training that facilitates teachers to adopt innovative practices, something that is also addressed in the literature (Alter & Cogshall, 2009; Bray-Clark & Bates, 2003) and associates training with a better icon of teachers' ability to teach (Brandshaw & Mundia, 2006; Subban & Sharma, 2006), especially in inclusion classrooms (Jetkins & Yoshimura, 2010; Schleicher, 2011). Last, the need for flexible curricula based on UDL principles is important in implementing UDL. Each component of such a curriculum (objectives, methods, materials, and assessments) is expected to be designed to meet the needs of learners and provide the necessary flexibility while providing a reference point for any teacher who wishes to follow and implement UDL guidelines (Cooper et al., 2008; Mavrou & Symeonidou, 2014). In short, a flexible curriculum should be structured with specific instructional objectives, methods, resources, and appropriate assessment techniques that support and implement inclusive practices, such as UDL in the classroom (Hitchcock et al., 2005).

Table 2. Difficulties in Implementing UDL

Difficulties in implementing UDL	Teachers (general education)	Teachers (special education)	Teachers (adult education)
	Total	Total	Total
1. Curricula	8	7	2
2. Required planning time	6	3	2
3. Educational Qualifications	8	2	2
4. Media availability	7	6	10
5. Distance learning	8	7	10
6. Health measures due to Covid-19	8	7	10

### Results of UDL Implementation

From teacher recordings in the second reflection journal, after implementing UDL, we conclude that the general results were positive. Teachers, independently of their specialty, general or special education, or adult education, noted that implementing the UDL favored students. All in all, the teachers found that students showed greater interest compared to previous lessons in which a traditional teaching model was applied, which is also confirmed by other studies (Chalkiadaki & Akogiounoglou, 2018; Chalkiadaki & Akogiounoglou, 2019). Additionally, they mentioned that the students participated more and performed better.

Regarding students with special needs/disabilities, the teachers found a manifestation of greater interest, participation, and better performance. In their opinion, the presentation of the respective cognitive object with multiple means contributed to this, as well as the possibility for students to express themselves in many ways depending on what suits them best based on their needs.

Adult SCS students with identified special educational needs showed correspondingly greater interest, participation, and higher performance compared to previous courses in which conventional teaching was applied, which, as the teachers themselves noted, was the one who 'had rejected' them in the past. Secondary school and SDE students with Greek as a second or foreign language showed greater interest, participation, and performance in full correspondence, or even slightly higher than the other student categories.

The teachers of our sample emphasized that UDL activated all students and acted as support even to those who have special needs/disabilities or have Greek as a second or foreign language because of the basic elements that compose it. For example some basic elements are the variety and flexibility in the presentation of the information, the variety and flexibility in the way students could express their knowledge, and the variety or flexibility in how students are motivated.

Even students who could be abusively considered 'standard' students respectively were positively affected due to the implementation of UDL, which addressed their own needs, and because the teaching was not based on a conventional form. The only textbook was enriched with the help of new technologies, a significant part with which especially modern youth are familiar and seek it. The finding, according to our research data, that both learners and teachers benefit from UDL as well is also supported by other studies and is compatible with their conclusions (Coyne et al., 2012; Courey et al., 2012; Hall et al., 2015; He, 2014; Davies et al., 2012; Kennedy et al., 2014; King-Sears et al., 2015; Kumar & Wideman, 2014; McGhie-Richmond & Sung, 2012; Smith, 2012).

Table 3. Results of UDL Implementation

No	Results of UDL implementation	Students	Students with special needs/disability	Students With Greek as a second language
		Total	Total	Total
1.	Greater interest	25	25	25
2.	Greater participation	23	25	25
3.	Better performance	20	22	24

### Teachers' Feelings

Regarding the emotions experienced by teachers during the planning of their teaching, but also after its implementation, we concluded that the specialty with what it implies, i.e., characteristics of education or pedagogical training, influenced the attitude of teachers. In particular, teachers from general secondary education stated that they experienced more stress throughout the process, possibly due to the greater difficulties they encountered (curricula, lack of training). On the contrary, teachers of special education and SCSs felt more confident, less anxious, and expressed personal satisfaction as a dominant emotion. Especially after implementing their teaching plan, which was

based on UDL, these teachers, in all respects, stated that personal satisfaction prevailed. Using pseudonyms, we quote relevant notes from teachers on their feelings before and after implementing their teaching plan.

#### *Teachers of General Education*

Before UDL implementation, Gerald says: "I feel very satisfied because I give my free time to improve my teaching. I have many ideas, and now I have the opportunity to realize them. '

After the implementation, he says: "I feel very satisfied and proud of myself. I feel like a better teacher as the time and effort I dedicated to my work were effective. '

Sarah, before UDL implementation, says: "I feel a little anxious about the whole procedure and its result. I am unfamiliar with UDL, and I need so much time to work on it stresses me enough." After her teaching, she points out, "I feel quite satisfied as I saw that my instruction had positive results. Also, a bit worried as I do not know if I can continue to work too hard for every lesson."

Accordingly, while he was scheduling his instruction plan, Peter pointed out: "I feel a bit confused. On the one hand, I feel happy to implement something new. On the other hand, I am very stressed, as I do not know much about this. It is my first trial implementing UDL in my instruction." After implementing his teaching plan, he said: "I am very satisfied with my instruction. It had positive results for my students and me as well. I really feel like a better teacher. However, I continue to feel anxious about whether I will be able to apply something so demanding in time and effort in the future."

#### *Teachers of Special Education*

Sonia says during the schedule of her teaching plan: "I feel very confident and satisfied. I am keen on implementing new practices in education as I follow every development in the field to fulfill my students' education needs." After her plan implementation, she claims: "I still feel satisfied and proud of myself. My lesson plan was successful. It won the students' interest and led them to understand better and manage the issue. My satisfaction is greater as I address students with special needs/disabilities, and the results were better than expected."

Consequently, Mary says before implementing UDL and during her plan scheduling: "I really feel excited and satisfied as I am called to implement a well-known practice. I schedule my plan by dedicating more time than the conventional instruction, but this is not a problem for me." After implementing my plan, she continues: "I am satisfied with my plan. Everything went well."

#### *Teachers of SCSs*

Before UDL implementation Alex says: "I feel a bit anxious but in a good sense, not stressed. I mostly have the impatience to fulfill my plan and implement it. I plan for my instruction and use innovative practices, but this time it is about a practice that has not been widely applied in Greece, at least in adult education." After implementing his teaching plan based on UDL, he said: "I am very satisfied with myself in the first place and my students as well. My lesson was interesting, and all my students somehow participated. It was especially satisfying to hear a "thank you" from my students when I finished the lesson. UDL was effective as a practice, and I will try to implement it as long as the circumstances allow me to."

Before the implementation, Tonia said: "I am satisfied that I will implement UDL to participate in research about it, as I am familiar with it. I implement UDL in my instruction, so it is not something new for me." And he concludes after the implementation: "As I expected, everything went perfect one more time. I am very satisfied with the attitudes of my students towards UDL."

*Table 4. Teachers' Feelings*

No	Teachers' feelings	Teachers	Teachers	Teachers
		(general education)	(special education)	(adult education)
		Total	Total	Total
<i>During planning</i>				
1.	Personal satisfaction	7	7	8
2.	Stress	6	2	2
<i>After implementation</i>				
1.	Personal satisfaction	7	7	10
2.	Stress	3	0	0

### Discussion

Our study focused on teachers' readiness to implement UDL, obstacles encountered during the process, and outcomes of UDL plans based on their records in reflection journals. Teachers in the sample were asked to implement UDL in mixed classes and to record their feelings, the outcomes of their instruction, and any obstacles they encountered.

The data we collected shows that teachers in Greece, especially those in general secondary education, are not fully prepared to implement UDL due to a lack of relevant training. They feel inadequate regarding new practices due to their lack of pedagogical training. Of course, they recognize, as an obstacle to the implementation of UDL, the lack of adequate school equipment, which is commonplace in the infrastructure of Greek schools. Instead, special and adult education teachers are more willing to implement new pedagogical practices such as UDL, as it is in line with the philosophy of special and adult education. They are somewhat accustomed to it, as a certain degree is required to work in the respective educational field. In addition, the inadequate curricula at the secondary level are the major deterrent factor compared to adult education, where the curricula are open and provide teachers and their instruction with desirable flexibility. As for the Covid-19 circumstances, these were particular difficulties faced by all teachers in the sample.

In examining the data from the records, we concluded that the implementation of UDL positively affected all students. They were graded regardless of any special circumstance, such as the presence of a disability or Greek as a second language. A positive effect was also evident in teachers' feelings after implementing UDL. Thus, even general secondary teachers who initially felt stressed about their new endeavor reported personal satisfaction and fulfillment after implementation in the second data set. However, some noted that despite satisfaction, feelings of stress remained. This result was largely due to their insufficient knowledge of the subject and inexperience. Special and adult education teachers felt greater satisfaction in the first lesson planning stage because they were more familiar with similar situations.

### Conclusion

The UDL is an effective framework for meeting the needs of a diverse student population. Our study of teachers using this philosophy showed positive results for both students and teachers. The teachers who participated in the research confirm the above assumption. Still, some indicate that they find it difficult to implement innovative practices such as UDL, primarily because of closed, non-flexible curricula, lack of training, and assumed infrastructure.

Special and adult education teachers differ in one respect because they receive training at regular intervals. In addition, the curricula in SCS are more flexible than in secondary education, so adult education teachers can be more flexible in designing and reforming their teaching.

The teachers in the sample expressed at the end of the study that they are satisfied with the whole process and will try to adopt as much as possible and as much as allowed from the whole philosophy and UDL guidelines. They also feel that it is worthwhile to link UDL with intercultural and inclusive education and to expand the implementation in these areas since UDL promotes cooperation among students, and implies acceptance and respect for the other. UDL appears to be highly inclusive and intercultural. Therefore, our research proves the need for changes that focus on the organized implementation of UDL based on curriculum modification, systematic training, and appropriate support for teachers.

### Recommendations

This study was the first attempt to investigate the acceptance and impact of UDL on Greek secondary education. We chose to study the issue from the perspective of teachers, who are a key factor in the educational process. They are essentially the proponents and implementers of the respective educational theories and the first indirect addressees of their impact.

The choice of the topic was based on the lack of research activities in this field and the desire to highlight this issue since UDL is widely applied abroad with positive results. The Greek educational system needs the application of innovative practices to meet its role and modern demands such as this inclusion. In addition, our research focused on the factors that influence the implementation of UDL and its outcomes to highlight its value and the need for reforms and appropriate actions on the part of the relevant bodies for its successful implementation. Modifying outdated curricula, appropriate teacher training, and adequate equipment are necessary to adopt the philosophy of UDL.

However, our research was conducted for a limited period of time, mainly due to the exceptional situation brought by COVID -19 and the corresponding health protocol. Therefore, we believe that a longer study, with more implementation data available to use for analysis, would be of particular interest, as it would be more thorough and provide more reliable results. Therefore, in a future study, it would be interesting to examine factors such as sample characteristics, age, gender, years of experience, and their influence on teachers' attitudes toward UDL.



### Limitations

A major limitation of the current survey was the special health conditions and therefore the relevant social policies due to COVID -19. Schools at all levels and for the first time were working only in a digital environment for an extended period (6 months). So, it was justifiably difficult to find a larger sample of teachers willing to use UDL under these circumstances. In contrast, most teachers worked this way for the first time and found it more difficult to implement a new philosophy such as UDL. Another important limitation, unrelated to health conditions, was finding a sufficient number of participants who knew UDL, as this was a prerequisite.

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**Appendix***Reflection journals*

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**1st Record (planning)**

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1. What is happening?
  2. How do I feel?
  3. My reaction
  4. Planning evaluation
  5. What would I do differently in future planning?
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**2nd Record (implementation)**

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1. What is happening?
  2. How do I feel?
  3. My reaction
  4. Results
  5. What would I do differently in future planning?
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