The application of Differentiated Teaching and Learning: potential challenges and obstacles

The content of this paper is part of a research conducted in Cyprus during the period December 2017-June 2020. The survey involved 419 primary school teachers. It is clear from studies conducted in recent decades that teachers face difficulties in trying to satisfy students' individual differences by applying differentiation strategies in practice (Read, 1998· Schumm & Vaughn, 1991· Simpson & Ure, 1994· Ysseldyke, Thurlow, Wotruba & Nania, 1990· Westwood, 2002). The main goal was to investigate the role of teachers (Koutselini, 2014) and the potential obstacles in the application of Differentiated Teaching-Learning (DTL) in mixed – readiness classrooms. Twenty teachers were observed (ten trainees and ten non-trainees in DTL), during their teaching practice at regular intervals. They took part in relevant interviews. At the same time, with 399 other teachers, they completed a questionnaire. The motivations and disincentives for participating in them and their basic training needs were identified. The trainees evaluated the training programs they attended on a Likert scale 1-5 (Papanastasiou & Papanastasiou, 2005). The non-trainers pointed out the reasons for their non-participation in the training programs. The SPSSv.21 program was used for the quantitative analysis and the inductive method for the qualitative analysis.

Keywords: *Cyprus teachers, differentiated teaching, mixed – readiness classrooms, professional development*

Introduction

The literature states that the differentiated teaching approach has a significant impact on student success. However, there is a gap between the implementation and the effectiveness of this approach. Therefore, better consideration of this issue and drawing safer conclusions requires further action and research (Anderson, 2007 · Subban, 2006 · Tomlinson & Allan, 2000).

In the new curricula of Cyprus it is emphasized that the evaluation (continuous - formative and final) of the student is part of the evaluation of the curriculum and the educational system (Ministry of Education and Culture, 2015). Differentiation is considered a key axis of the educational process. Reference is made to success indicators and competency indicators. Success indicators refer to the student and his/her achievements, while competency indicators refer to the teacher and the topics.

Courses must cover all levels of student readiness. Their real needs need to be taken into account in order to differentiate in practice. At this point, as Koutselini (2010) points out, the emphasis is on inductive processes and DTL, so that no student is lost, since different levels of development work together in the same classroom and, therefore, students work on what they need.

1   The Action Research will give them the diagnosis of the student's
2   developmental point and the intervention for the improvement of both the
3   teacher and the student. It is noted, finally, that the determination of the
4   expected levels of development of the student allows high expectations for
5   each of them and facilitates its diagnostic evaluation and improvement.
6   The present research aims to investigate the knowledge of public
7   primary school teachers about the concept and process of DTL and its degree
8   of application in teaching practice. At the same time, the research aims to
9   investigate the attitude of teachers towards the implementation of DTL and
10   the factors that they consider to influence them in its implementation. And
11   this, in order to facilitate the cultivation of positive attitudes between them
12   and to maximize its implementation in schools. It also aims to investigate the
13   degree of satisfaction of teachers with the training programs, which are
14   organized by the competent government agencies or by various agencies and
15   have attended.
16
17   **Literature Review**
18
19   **The investigations**
20
21   Most TBI-related research has been conducted in the United States,
22   although its implementation is not a common practice in that country (Smit &
23   Humpert, 2012). Research has shown that changing the core beliefs of teachers
24   dealing with their reform concerns can facilitate the application of
25   differentiation (Fullan, 1999; Hord, Rutherford, Huling - Austin, & Hall,
26   1987).
27   In the province of Quebec in Canada, recently, a large school carried out a
28   reform aimed at reducing the emphasis on social comparison. This was done by
29   encouraging teaching approaches that focus on improving teaching and
30   learning, such as differentiated teaching strategies. An additional goal was to
31   reduce school dropout rates and promote academic performance. Despite this
32   effort, not all teachers embraced differentiated teaching (Roy et al., 2013).
33   In Nicolae (2014)'s research on the Romanian decentralized education
34   system, a significant number of teachers had doubts about the successful
35   implementation of differentiation, due to class size, lack of resources, lack of
36   time and growing demands.
37   Neophytou and Valianti (2015), based on research conducted in the
38   Cypriot education system, argue that there is a lack of training, support and
39   differentiated material, as well as non-functional utilization of undifferentiated
40   textbooks. It is good for every teacher to have the opportunity for appropriate
41   training, so that they can differentiate their teaching. In order to achieve such
42   an innovation, but also, in general, any innovation, the school unit, the climate
43   and the relationships that prevail in the context of its operation play an
44   important role. The acceptance of the change or the resistance to it depends on
45   them.
46

1 **Outcomes of differentiated teaching**
2
3   Numerous studies have revealed the fact that differentiated teaching has
4 beneficial effects on academic success (Beck, 2001; Chamberlin & Powers,
5 2010; Felder & Brent, 2005; Ford & Chen, 2001; Rogers, 2009; Tulbure,
6 2010).
7   Research by Karadag and Yasar (2010) found that a differentiated
8 teaching approach had positive effects on students' interest and attitudes. In
9 addition, other studies explain that differentiated teaching increases students'
10 interest in the subject (Tieso, 2005, 2001; Fahey, 2000; McAdamis, 2001).
11
12 **The concept of differentiation**
13
14   Today there are many approaches to the concept of differentiation. Here
15 are the most important of them:
16   According to Kanakis (1991), it is the teaching with which different
17 students are taught with different, hierarchical, based on specific criteria, ways,
18 means, procedures, environment, so as to meet the different needs that coexist
19 in mixed readiness classes.
20   Bearne (1996) notes that its application takes into account the particular
21 individual character, the individual rhythm, the various predispositions of the
22 student, as well as his various objective requirements. Manolakos (2012),
23 borrowing some elements of Bearne, states that differentiation is the didactic
24 approach, in which the Curriculum is modified, the teaching methods, the
25 sources, the learning activities, the expected final result, in order to respond to
26 the differentiated needs of each student, in order to maximize the learning
27 opportunities for each of them in the classroom.
28   Differentiated teaching is one of the implications of a post-modern
29 example curriculum for teaching and learning. The transition from
30 instrumental, linear, algorithmic approaches to curriculum development by
31 experts to technocratic processes, to a heuristic, reflective, cyclical effort of all
32 participants shows the transition from modernity to post-modernity (Koutselini,
33 1997b), a change sought to shape education and learning processes.
34   Tomlinson (1999) describes differentiation as the shaking of the
35 classroom, so that it adapts to the needs of more students. Kyriakides et al.
36 (2009) classify it among the five stages of effective teaching (basic direct
37 teaching, quality of direct and principle of indirect / active teaching, quality of
38 active teaching, differentiated teaching, quality of differentiated teaching).
39   Sippi-Charalambous and Kyrou (e.g.) report that it includes a series of
40 measures for the organization of teaching and learning, which seek to adapt
41 teaching to the abilities, performance, interests and special inclinations of
42 students. Thus, the best possible conditions for personal development are
43 created for each student, but at the same time to ensure a commonly accepted
44 level of basic knowledge, skills and abilities. Borrowing the view of Tomlinson
45 (2003), they note that it is a way of thinking about teaching and learning,
46 starting from the position that teaching should start from the point where

1 students are, rather than based on a predetermined action plan, which ignores
2 the readiness, interest and learning profile of the student. They record the view
3 of Koutselini (2006) that "it should be perceived as a teaching method, which
4 is based on and treats students as biographies and not as copies of the same
5 image ..." (p. 5).

6

7 **Possible challenges and obstacles**

8

9   It is clear from studies conducted in recent decades that teachers have
10 difficulty trying to respond to students' individual differences by applying
11 differentiation strategies in practice (Read, 1998; Schumm & Vaughn, 1991;
12 Simpson & Ure, 1994; Ysseldyke, Thurlow, Wotruba & Nania, 1990 · Westwood,
13 2002). However, they often feel the need to deal with differentiating students in
14 the regular classroom. However, they rarely plan for the proper implementation of
15 differentiated teaching. In other words, while they know the theory, they find it
16 difficult to apply it in practice (Hootstein, 1998; Moon, Callahan, Tomlinson, &
17 Miller, 2002; Tomlinson et al., 2003).
18   Based on the above, it is found that teachers' understanding of the concept
19 of DTL and how it is applied is insufficient. In addition, they have various
20 misconceptions about this model. For example, they wonder if this is an
21 educational strategy or method similar to other educational strategies or
22 methods.
23   Veenman (1995) focuses on teacher preparation. Stresses their inability to
24 apply differentiation in teaching practice, due to insufficient preparation. As a
25 result of this shortage, teachers use the same practices for all students.
26 McGarvey et al. (1997), agree with the above view. In their research, they
27 emphasize that teachers, although they make efforts to apply DTL, often need
28 additional help, in order to be able to manage the various learning needs that
29 exist in a mixed skills class.
30   Another obstacle is the planning of the course and the application of
31 various teaching methods to support differentiation. The principles of
32 differentiation are not fully applied (Koutselini - Ioannidou & Pyrgiotakis,
33 2015).
34   Among the difficulties faced by many teachers is the professional
35 mentality of the team. Vocational training of teachers is considered complex
36 and demanding (Avalos, 2011 · OECD, 2005). This takes on greater
37 dimensions as DTL is a challenging learning process (De Neve, Devos &
38 Tuytens, 2015), even for experienced teachers (Nunley, 2006).
39   There is a problem in small schools. Because they have a small number of
40 teachers, the development of the internal team can be difficult or limited.
41 Therefore, as Wallin & Reimer (2008) argue, networking between small
42 schools needs to be strengthened so that there is a variety of successful
43 differentiated teaching and learning strategies.
44   Supportive leadership plays an important role. Where it does not exist, it is
45 very difficult for DTL to be implemented. Mulryan - Kyne (2007) emphasize
46 the need for ongoing support, not a "quick fix". Tomlinson, Brimijoin and

1   Narvaez (2008) emphasize the importance of school leadership. These leaders
2   need to be more than just managers. They must be suitable leaders for DTL and
3   they must have a vision and know how to plan and evaluate.

4   As Tomlinson (2003) states, the exchange of high-level knowledge for
5   effective differentiated teaching between teachers is necessary to stimulate its
6   use.

7   This is also proven by a research conducted in a Flemish school.
8   According to Neve, Devos & Tuytens (2015), the conclusion was that a
9   possible explanation for the weaknesses of differentiation in practice could be
10   due to the fact that teachers in Flemish primary schools rarely attended their
11   peers' classes and, thus, did not have the opportunity for feedback from each
12   other. Bakker & Demerouti (2007) write that peer support can shield high job
13   demands.

14   The results show that in order to improve the professional learning of
15   teachers related to DTL, schools should try to get the best support from their
16   peers. That is, by encouraging teachers to engage in in-depth discussions with
17   their peers and by improving opportunities to share knowledge and experiences
18   with other teachers.

19   According to the MetLife Research (Metropolitan Life Insurance
20   Company, 2009), collaboration between teachers improves the school climate
21   and the climate among teachers.

22   In addition, according to Pearson & Moomaw (2005), teachers with
23   autonomy have a higher degree of professionalism and state that they use more
24   differentiated learning strategies than their less autonomous colleagues.

25

26 **The main challenges**

27

28   The main challenges of differentiation include limited preparation time,
29   heavy workload, lack of resources, lack of teacher skills in this area and lack of
30   motivation for teachers to apply it (Chan, Chang, Westwood & Yuen, 2002;
31   Scott, Vitale & Masten, 1998 · Westwood, 2002).

32   Teachers refuse or cannot differentiate their teaching due to lack of
33   practical knowledge on how to apply this model (Callahan, Tomlinson, Moon,
34   Brighton & Hertberg, 2003 · Valianti, 2015) and lack of support and material
35   (Ainscow & Muncey, 1989 · Tomlinson, 1995; Simpson, 1989).

36

37 **Their professional development is necessary**

38

39   From all this it can be concluded that the successful introduction of this
40   innovation and its continuation are judged by the degree of appropriation, but
41   also the familiarity of teachers with it, so that they feel that the change and its
42   result concerns them directly and therefore it is worth working collectively to
43   establish and develop it (Fullan, 1982 · Hargreaves, 1994).

44   Based on these, it is a necessary condition for the education and
45   professional development of teachers in subjects related to DTL (McAdamis,
46   2001 · Blozowich, 2001 · Koutselini - Ioannidou, 2008).

Conclusions

Professional development plays an important role in filling the existing gaps in the education profession and, consequently, with the DTL. Thus, it is observed that after receiving a professional development program, teachers gradually become familiar with it and with the understanding of how to design a differentiated lesson (Wua, Yu-Liang & Changb, 2015).

Schools could create the conditions that enhance a common sense of responsibility among teachers to meet the needs of each student. To increase the effects of collegiality and support, schools could appoint counselors, who will train teachers in the learning process of implementing differentiation in the classroom (De Neve, Devos & Tuytens, 2015).

It is already known that the concept of differentiation is not an easy concept to understand and it is very difficult, when understood, to be applied in practice by teachers. Therefore, it is imperative to determine how it is defined by its contemporary scholars and how it will be part of the educational practice (Koutselini-Ioannidou, 2008). After all, this is something that has been proven by research by Koutselini and Persianis (2000).

Culture plays an important role in a school unit. Reezigt & Creemers (2005) report that schools with a culture of improvement and continuous effort improve more easily than schools that constantly try to avoid change and fear improvement. According to the international literature, in some countries, small schools report high levels of DTL (eg in the Nordic countries), while small schools in other countries, such as the United Kingdom, do not show the development of a culture of differentiated teaching (Hargreaves, Kvalsund and Galton, 2009 · Kvalsund & Hargreaves, 2014). Differentiation, of course, is not limited to small schools. It is applied, mainly, when examining the diversity of students.

Some factors positively affect the implementation of the DTL and some negatively. The competent educational institutions must know them, in order to strengthen the former and to fight the others.

Methodology

As Morse (1991) emphasizes, the use of a mixed method in the same study is particularly important. She refers to methodological triangulation and defines it as "the use of at least two methods, usually qualitative and quantitative, in the research of the same research problem" (p. 121).

In methodological triangulation, the researcher can work in two ways: The first involves the use of more than one tool, which produces the same type of data, in the study of the same phenomenon. An example is the use, according to Gilbert (2001), of using two different scales of evaluation, in the same sample, at the same time. This method is used to check the reliability of data collection.

1   The second concerns the use of two or more methods in a complementary
2 manner. This is done in the study of the same sample, to answer the same
3 research questions. This method is used to check the validity of a study.

4   It is important to note that, according to Mitchel (1986), it has become
5 apparent that the use of multiple methods balances the weaknesses and
6 strengths of these methods.

7   The philosophical framework of the research is that of mixed research:
8 Regarding quantitative research, the review is used as a research approach and
9 the questionnaire is used as a data collection technique. Its purpose is to find
10 relationships between variables, while emphasizing the formulation and control
11 of hypotheses. According to Papanastasiou & Papanastasiou (2005), the
12 researchers, in general, tries, in an objective way, to discover what is
13 happening in the world around him, without being influenced by his personal
14 values and attitudes.

15   Psaltis (2010) states that this type of research is supported by positivism,
16 which considers the social world similar to that of natural phenomena
17 (objective approach). He advocates that genuine knowledge is based on
18 sensory experience and can proceed through observation and experiment.

19   In contrast to the quantitative, through the qualitative method and with the
20 technique of data collection the interview, each person can be studied
21 separately and the researcher can come in direct contact with him or her. Its
22 purpose is to understand and describe phenomena, which emphasize the
23 development of new theories. It is characterized as a continuous process, in
24 which the researcher observes some incidents and then enriches his / her
25 observations with interviews, so that there is a better understanding of the facts.

26   In quantitative research, the researcher stays at a distance and does not
27 affect data collection in any way. The answers given in the questionnaire are
28 analyzed with statistical techniques, which help to draw conclusions. In
29 addition, by using quantitative research, the researcher can have enough
30 sampling, with different views, so that the result is more valid.

31   Also, as reported by Papanastasiou & Papanastasiou (2005), in
32 quantitative research the form of the research process has objectivity and an
33 attempt is made to generalize to larger populations. According to Kyriazis
34 (2002), it seems that the structure of quantity is rigid and stable and during the
35 research the modifications that can be made are negligible.

36
37 **Qualitative research focused on DTL**

38
39   Both the theory and its practical application were studied with the
40 contribution of teachers.

41   Based on the purpose of the research, a concept map was developed.
42 Based on this, the appropriate organization of the necessary data for the
43 research was carried out. The design of this map was done in parallel with the
44 study of the literature. This is why it has been revised several times.

45   Therefore, taking into account the type of research, but also the parameters
46 that the research sought to study, from the range of quality research strategies,

1   the case study was selected. This type of research design provides the
2   opportunity for in-depth study of its subjects within their physical context and
3   can be applied to a limited sample.
4   In addition, in this research, the multiple case study was followed, because
5   teachers from different public primary schools in Cyprus were studied.
6
7   **Participants**
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9   The quantitative survey was attended by 419 teachers (272 - 64.9%
10   women and 147 - 35.1% men) from 5 provinces of Cyprus: Nicosia 32.9%,
11   Limassol 18.6%, Larnaca 20%, Paphos 22% and Famagusta 6.4%. 52% come
12   from urban areas and the rest from rural areas.
13   The majority of teachers were 31-40 years old (64.7%) and 41-50 years
14   old (31.5%). The years of service of the participants ranged from 1-4 (3.8%),
15   5-9 (16.7%), 10-14 (27.4%), 15-19 (21.5%), 20-24 (15.5%), 25-29 (12.4%) and
16   over 30 years (2.6%). 207 (49.4%) were graduates of the University of Cyprus,
17   159 (37.9%) were graduates of higher education institutions abroad and 53
18   (12.6%) were graduates of the Cyprus Pedagogical Academy.
19   324 (77.3%) had a master's degree and 16 (3.8%) had a doctorate. In terms
20   of employment, 363 (88.8%) were teachers, 44 (10.8%) were assistant
21   principals and 12 (2.9%) were principals. Finally, participants had an average
22   of 15.9 years of public service and 36 teachers had an average of 2.1 years of
23   service in a private school.
24   The qualitative research was attended by 10 trainees and 10 non-trainees
25   in DTL issues. The non-trained participants included 4 permanent teachers, 4
26   Assistant Directors, 1 contracted and 1 substitute teacher. The teachers were
27   from 5 provinces (Paphos, Limassol, Nicosia, Larnaca, Famagusta). There
28   were participations from both the urban area and the countryside. They all had
29   at least one postgraduate degree as an academic qualification. Their years of
30   service range from 6 to 26.
31   The trained teachers included 6 permanent teachers, 2 Assistant Directors,
32   1 contracted and 1 substitute teacher. The teachers were from five provinces:
33   Paphos, Limassol, Nicosia, Larnaca, Famagusta. There were participations
34   from both the urban area and the countryside. They all had at least one
35   postgraduate degree as an academic qualification. Their years of service range
36   from 3 to 21.
37
38   **Procedures**
39
40   The research was limited to teachers of public primary schools, who teach
41   Greek or Mathematics or both. Regarding the issues of access and entry into
42   the field, no problem was encountered. Nevertheless, before the visit to the
43   schools for the data collection, there was communication with their addresses
44   and with the teachers who participated in the research, the relevant permits
45   were requested for our entry into the field, there was partial information about
46   the purpose of the investigation and the procedures in which they were invited

1 to participate and it was emphasized that the present investigation is not a form
2 of formal investigation. In addition, they were assured that anonymity and
3 confidentiality about the school's data and theirs would be maintained, using
4 aliases, and the dates of our visit were arranged. It is emphasized, of course,
5 that all this was done after receiving a relevant permit from the Department of
6 Primary Education of the Ministry of Education and Culture of the Republic of
7 Cyprus.
8   During the observations in the classrooms, the observers sat in different
9 places in the classroom, so that they had two different perspectives (student
10 behavior and teacher behavior). In all the observations, the classroom space
11 was plotted on a diagram, on which the cases that attracted attention were
12 noted. These, immediately after they were conducted, were supplemented and
13 enriched based on the conversation of the observer.
14   Regarding the interviews before they were conducted, the teachers were
15 informed about the purpose of the research and asked for permission to use a
16 tape recorder. The interviews were transcribed. The non-verbal cues, which
17 were recorded during the interview, were marked in brackets - [] - on these
18 texts. Finally, with the method of continuous comparison, the interviews were
19 analyzed. Recurring words, phrases and topics were identified. There was an
20 end to codes (emic & etic) and then categories of codes, depending on the
21 relationship between them.
22
23 **Tools**
24
25   Three methods were selected for the collection of the research data: the
26 observation, the interview and the questionnaire. They enable the cross-
27 referencing of information (triangulation) and, therefore, lead to ensuring the
28 fidelity of the research.
29   Remark: offered the opportunity to closely investigate the application of
30 DTL, to investigate the relevant knowledge of teachers and the existence of
31 misunderstandings, to determine whether its application is identical with what
32 the theory states and, in particular, to display the external representation of
33 reality, as perceived in the classroom.
34   The role of the researcher as an observer and her colleague, who was
35 conducting observations from another part of the classroom, was spectator -
36 non-participatory.
37   The type of observation used could be said to be the semi-structured
38 observation. A list of focal points was drawn up before the observations were
39 made. The observation guide relied on the research questions to ensure the
40 solvency, that is, that what will be collected through it will be consistent with
41 the research questions and, consequently, the purpose of the research. Finally,
42 it is stated that the purpose of the observations was to create a detailed
43 memorandum for each observation.
44   Interview: Through the interview the teachers were given the opportunity
45 to state their own views on DTL in great detail. They were asked several main
46 and clarifying questions and the researcher was made aware of all the

1 theoretical data on DTL held by the participants in the research and all the
2 details regarding its application.
3   Interviews were conducted with teachers who had already been observed.
4 This pattern was followed, first by an observation and then by an interview,
5 because an effort was made not to influence the interviewees in the way they
6 would teach their lesson and because the aim was to enrich each interview with
7 examples from the class. The duration of the interviews was 25´-30´.
8   The semi-structured interview was selected. This type was chosen because
9 the aim was to provoke an open discussion, where there is more flexibility and
10 freedom in the respondents. Therefore, an interview guide was prepared, which
11 included various types of questions (eg emotional, knowledge, etc.) and
12 clarifying questions, to cover the topic broadly.
13   Questionnaire: Consists of structured questions in series. Gathers
14 questions, data and information, descriptive and explanatory, for behaviors,
15 views, attitudes, characteristics, etc. Among its advantages is the fact that it is
16 easy to create and use, it is more economical, respondents can express
17 themselves freely, can be sent to a large number of people and is the least time
18 consuming method. Among its disadvantages is the fact that the respondent is
19 obliged to answer in a specific way and the researcher is not able to clarify the
20 open-ended questions.
21   The questionnaire is required to be complete, characterized by clarity,
22 coherence, appropriate structure, to include control questions, to be short, to
23 have a technical presentation, to include basic completion instructions and
24 conceptual explanations and to be capable of coding and computer processing.
25 The questions can be open or closed. In the first, the respondent expresses his
26 opinion freely. The questionnaire used in the present study included both types
27 of questions and many types of closed-ended questions.
28   Analytical induction was used as a method of data analysis
29 (Vassilopoulou, e.g. Lund, 2005). Through it, the data collected from both the
30 observations and the interviews were used, in order to faithfully attribute the
31 phenomenon studied, to identify and report the divergent / negative cases and,
32 therefore, to ensure the criterion of fidelity and impartiality in the research. A
33 systematic course of analysis of our data was followed, based on the strategy of
34 explanation building (Yin, 2012).
35
36
37   **Results**
38
39 **Challenges**
40
41   DTL is a very effective teaching method in mixed readiness classes. This,
42 which is the first challenge for every teacher, is evident from the research used
43 in the literature review and from the present research. Each student works at his
44 own pace and all the results - learning, emotional, etc. are very satisfactory.
45   Another very big challenge is the full utilization of the very limited
46 teaching time. With the frontal teaching method, as with other methods, this

utilization is not possible. For many students in the classroom, valuable time is lost, since the teachers, very often, work and collaborate with good students in the classes while a large number of their classmates are just in the classroom apathetic. With the application of DTL, as revealed by the researcher's observations and interviews, students work on material that is adapted to their knowledge and strengths, which allows them to make full use of teaching time.

Other major challenges of differentiation include the following:

Limited preparation time: This has been reported by previous researchers (Westwood, 2002). It was also evident in the present research. Every teacher of a Cypriot public primary school prepares for teaching in the afternoon of the previous day. His preparation concerns all the courses he will teach. As mentioned in the present research, the preparation of DTL is time consuming in both its preparation and implementation ("Some feel that they are more in charge" (66-67- S1_NG), ("... the time has passed" 97 - 99- S1_NG), ("Keep this time consuming ...", 592- S4_DH), ("the preparation of a differentiated course is time consuming", 2829-2832-S17_MM), ("as the differentiation is proposed, it is time consuming", 588- S4_DH).

The next challenge is related to the previous one. The application of the DTL contributes to an even heavier workload for teachers. This heavy workload is known from research (Chan, Chang, Westwood & Yuen, 2002). Mixed-capacity classes, the large number of students in each class, and the requirements of the Curriculum lead to this situation. The Cypriot teachers are aware of this situation and reveal it in the answers they give to the questions of the questionnaire and in the interviews they provide.

The following examples are mentioned as examples:

"Yes, yes, the syllabus should be reduced, yes, well, because this situation presses us. Yes, with the pressure, you forget the differentiation, yes, everything "(963-964-S7_PP)," If I see that I succeed with the material, I feel comfortable to apply different things, but if I have this material, it presses us "... (2197- 2198-S14_KA), "And something to do with this stress that we all teachers have. That of matter. To make a plan how we can cover the matter, but also to make a differentiation "(2447-2449-S15_DM)," Then the syllabus that stresses you. Because when will you cover the syllabus. Yes, especially these kids, how will they go to the next class. Already some of them repeat the class"(2570-2573- S16_SP).

Of great importance for the subject in question is the lack of relevant skills on the part of Cypriot teachers, who feel unable to meet the challenges of teaching in mixed readiness classes. The answers given to the questionnaire questions and the interviews showed that there is a serious shortage of them, something that was already known from previous research, such as that of Erotokritos and Koutselini (2014). Many examples from the present research can be cited, but if there is a limit to a few, the following: "You are the first one I hear you deal with this (103 - S1_NG).

Nor did a counselor come to show me what an appropriate differentiated course should be (105-106 - S1_NG), "I'm not sure if the differentiation I have in mind is the one you know from university (662-673 - S5_ES).

1   The last challenge among Cypriot teachers in this article is the lack of
2 motivation for its implementation. This deficiency has been identified since
3 1998 by Scott, Vitale & Masten and by Westwood (2002). "In general, we
4 want incentives to implement it" (2404-S15_DM), reports DM .
5
6 **Obstacles**
7
8   The first obstacle concerns the lack of knowledge about DTL. From the
9 information gathered it is clear that they were neither taught nor studied this
10 subject. That they do not know enough (817– S6 _ SK). "It is not easy" (96-
11 S1_NG), says one in the interview. "Many of us listen to the differentiation in
12 the classes…, sorry ..., few of us have the techniques and the means that we
13 can use for the differentiation" (971 - 973 - S7 _ PP), it is mentioned in the
14 interviews and "That they don't know quite in the appropriate way its
15 implementation is done "(698 - S5_ES).
16   The lack of tools is also a big obstacle: "I would also offer tools to the
17 trainers, ways and techniques of the model. And textbooks. Syllabus for a
18 person to have at their disposal to work. That's all". (1037-1038 - S7 _PP). The
19 concept of tools includes teaching aids, pictures, mechanical and electronic
20 means, interactive whiteboards and so on. "They want syllabus. Both
21 theoretical and practical (699 –S5_ES).
22   Few of the participants in the study attended a related training program.
23 They believe that there are no opportunities for training. ".… I think the lack of
24 training" (971– S7 _PP) is an obstacle to the implementation of the DTL. "...
25 and the appropriate training in this subject (does not exist), are impossible
26 (324-325 - S2_XS). After all, training courses need to be experiential and
27 practical. "I would change the trainings, if I had the opportunity to change
28 something, I would change the training programs. To become more
29 experiential and practical "(1037-1038 - S7 _ΠΠ), it is emphasized. "To be
30 offered training", (1043-1044 - S7 _PP). Is emphasized in another point.
31   An obstacle related to training is the lack of organization and attendance
32 of "sample courses". "Of course, I would like sample lessons and other
33 trainings. The one I attended was theoretical (319-320-S2_XS), it is mentioned
34 in an interview.
35   There are many teachers who consider teaching time very little compared
36 to what they have to do in the classroom. "Until the bell rings, even if you say
37 one or two things, the next bells rings. If various other incidents arise in the
38 classroom, the time is up "(96-98 - S1_NG), says one participant in the
39 research and" The lack of teaching time "(563 - 564 - S4_DH) (is an obstacle
40 mentions another." As I have said, as the differentiation is proposed, it is time
41 consuming "(588- S4_DH).
42   Teachers believe that curriculum is overburdened. They have a lot to teach
43 and this does not allow them to deal with an innovative element: Yes, with the
44 pressure, you forget, yes, the differentiation, yes, everything (962-963– S7
45 _PP). "The teacher has to prepare many lessons and many lesson plans" (957-
46 958– S7 _PP), it is emphasized.

1   Another important obstacle is the fact that in the cases of organizing
2 training programs, they are not given the opportunity to be informed about
3 details. Their sources of information are the trade unionists or their other
4 colleagues. "Incomplete training and unorganized training" (446 - S3_AD),
5 "Lack of training" (563 - S4_DH).
6   The small number of organized training programs. Their knowledge was
7 little enriched.
8   Lack of appropriate support material: "However, because there is no
9 appropriate support syllabus and proper training in this area, they are weak"
10 (323-325 - S2_XS). But, because there is no suitable supporting material
11 "(323-324 - S2_XS). "There is a great need for differentiation, but we do not
12 have the necessary books that will help us" (1037-1039 - S7 _PP).
13   The lack of trainers with full knowledge of the subject under examination.
14 The evaluation of the trainers by the participants in the research, leads, without
15 a doubt, to this point. Their low-grade teaching approach and the teaching
16 methods they use can also be included in this point.
17   The various problems that exist within the school units and within the
18 classrooms. These are related to the undisciplined children, the special
19 characteristics of some of them that require special care, diseases of children
20 and so on. "A thousand and two other problems we have to face every day"
21 (109-110- S1_NG), says a teacher. Another emphasizes: "But, come to a class
22 with hyperactive kids, kids with school escorts, kids who do not know the
23 basics. Can you apply them properly? I do not think so (720 - 722 - S5_ES).
24   The large number of children in the classroom is a serious obstacle, as
25 many teachers claim. "The main difficulty is that we experience the given data
26 of Cyprus, based on the fact that we do not have the right number (children) in
27 the classes" (563 - 564 - S4_DH). "Even if we reduce the numbers within the
28 classrooms. Twenty-five for differentiation is a very big number. Around
29 fifteen - sixteen, the results are more realistic. In fact, more feasible. These
30 (959-962– S7 _PP).
31
32
33   **Discussion**
34
35   There is a wealth of research that reveals the contribution of differentiation
36 to student learning, self-efficacy and learning beliefs.
37   Vocational training of teachers is considered complex and demanding
38 (Avalos, 2011 · OECD, 2005). This takes on greater proportions, given that
39 DTL is a challenging learning process (De Neve, Devos & Tuytens, 2015),
40 even for experienced teachers (Nunley, 2006). As it emerged from the results
41 of the present research, the teachers' knowledge about DTL and its application
42 in the classroom is not satisfactory. From this point the obstacles to its
43 implementation begin.
44   A study conducted by Stavrou & Koutselini (2016) and examined the
45 effectiveness of DTL in improving first grade high school reading identified
46 the main obstacles to defining, analyzing and prioritizing reading skills and

1 strategies from the simplest to the worst. the most complex, the clarification of
2 students' readiness, the planning of courses to deal with this readiness, the
3 interests and the way of learning, the flexible class organization and, most
4 importantly, the elimination of misunderstandings about their role in the
5 learning process. This reveals the many gaps that exist in teachers of all levels
6 for DTL.

7   Teachers need to review and enrich their skills, apply existing Curricula,
8 develop innovative research on teaching, and adapt changes to the needs of
9 their students (Musset, 2010). Challenges in education, such as student
10 diversity and mixed readiness classes, new technologies and strict academic
11 standards, as well as the goals set, Karagiorgis & Symeou (2006) note, lead to
12 a lifelong learning process.

13   It is necessary to have and use appropriate teaching aids, supervisory,
14 engineering and electronic. The great importance of these is constantly
15 emphasized, because they help to stimulate the interest of children and lead to
16 much better results. Such means are sought by Cypriot teachers and it is very
17 helpful for them to have help from experts to solve this problem.

18   Teachers feel that they need additional training in order to be able to apply
19 DTL in their classroom. It is emphasized that this finding must be utilized by
20 the bodies responsible for teacher training. The training programs, in order to
21 overcome another important obstacle, it is necessary to prepare in every detail
22 in order to attract their teachers to attend them without any difficulties and
23 even without pressure and other difficulties.

24   The relevant training programs that are presented at infrequent intervals,
25 on the one hand, are very few and, on the other hand, do not offer what they are
26 expected to offer to those who attend them. This requires the existence of real
27 reflection on the part of those in charge, who when organizing such
28 conferences must be much more careful in all areas of preparation, planning,
29 material to be offered, the means to be used, the methodology, etc. Teachers
30 have many tricks from them: The connection of theory and practice is
31 necessary, the existence of practical work, the certification of attendance,
32 which is obviously used for professional evaluation purposes and is an
33 incentive for attendance and so on.

34   Teachers expect from these training programs, since they will be able,
35 without complicated procedures, to attend them, to know the ways of
36 cooperation between teacher and students to discover knowledge, part of each
37 seminar to be practical and not everything to be theoretical, to know and to
38 provide, if possible, special tools and means for the implementation of the
39 DTL, texts that refer to it and to solve all their questions.

40   The preparation of the teacher occupies an important place, when he takes
41 into account the application of differentiation in the classroom. The utilization
42 of teaching time, something very important in the teaching practice, becomes
43 even more important in the cases of application of DTL. The preparation for
44 the implementation of the DTL concerns all stages of teaching, from
45 programming to feedback. Only then will the teacher be able to apply it
46 effectively.

1   Regarding the role of students, it is imperative that they try to use all the
2   teaching time and really work both as individuals and in a small group and
3   collaborate. The classroom climate plays an important role in the success of
4   differentiation. The existence of negative climate is a significant obstacle to its
5   implementation. That is why teachers must find ways to cultivate a positive
6   atmosphere during the lessons.
7   There is a wealth of research that reveals the contribution of differentiation
8   to student learning, self-efficacy and learning beliefs.
9   Teacher vocational training is considered complex and demanding
10   (Avalos, 2011; OECD, 2005). This takes on greater proportions, given that
11   DTL is a challenging learning process (De Neve, Devos & Tuytens, 2015),
12   even for experienced teachers (Nunley, 2006). As it emerged from the results
13   of the present research, the teachers' knowledge about DTL and its application
14   in the classroom is not satisfactory. From this point begin the obstacles to its
15   implementation.
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20   students' readiness, the planning of courses to deal with this readiness, the
21   interests and the way of learning, the flexible class organization and, most
22   importantly, the elimination of misunderstandings about their role in the
23   learning process. This reveals the many gaps that exist in teachers of all levels
24   for DTL.
25   Teachers need to review and enrich their skills, apply existing curriculum,
26   develop innovative research on teaching, and adapt changes to the needs of
27   their students (Musset, 2010). Challenges in education, such as student
28   diversity and mixed readiness classes, new technologies and strict academic
29   standards, as well as the goals set, notes Karagiorgis & Symeou (2006), lead to
30   a lifelong learning process.
31   It is necessary to have and use appropriate teaching aids, supervisory,
32   engineering and electronic. The great importance of these is constantly
33   emphasized, because they contribute to stimulating the interest of children and
34   lead to much better results. Such means are sought by Cypriot teachers and it is
35   very helpful for them to have help from experts to solve this problem.
36   Teachers feel that they need additional training in order to be able to apply
37   DTL in their classroom. It is authorities that this finding must be utilized by the
38   bodies responsible for the training of teachers. The training programs, in order
39   to overcome another important obstacle, it is necessary to prepare in every
40   detail in order to attract their teachers to attend them without any difficulties
41   and even without pressure and other difficulties.
42   The relevant training programs that are presented at infrequent intervals,
43   on the one hand, are very few and, on the other hand, do not offer what they are
44   expected to offer to those who attend them. This requires the existence of real
45   reflection on the part of those in charge, who when organizing such
46   conferences must be much more careful in all areas of preparation, planning,

1 material to be offered, the means to be used, the methodology, etc. Teachers
2 have many demands from them: The connection between theory and practice,
3 the existence of practical work, the certification of supervision is necessary,
4 which is obviously used for professional evaluation purposes and is an
5 incentive for monitoring and so on.

6 Teachers expect from these training programs, since they will be able,
7 without complicated procedures, to attend them, to know the ways of
8 cooperation between teacher and students to discover knowledge, part of each
9 seminar to be practical and not everything to be theoretical, to know and to
10 provide, if possible, special tools and means for the implementation of the
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13 into account the application of differentiation in the classroom. The utilization
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15 even more important in the cases of application of DTL. The preparation for
16 the implementation of the DTL concerns all stages of teaching, from
17 programming to feedback. Only then will the teacher be able to apply it
18 effectively. Regarding the role of students, it is imperative that they try to use
19 all the teaching time and really work both as individuals and in a small group
20 and collaborate. The classroom climate plays an important role in the success
21 of differentiation. The existence of an Athenian climate is a significant obstacle
22 to its implementation. That is why teachers must find ways to cultivate a
23 positive atmosphere during the lessons.

24
25
26 **Limitations and Future Study**
27

28 As already mentioned, the content of this text is part of a large research in
29 Cyprus, which concerns the differentiated work in the public Cypriot primary
30 schools. Among other things, reference was made to the challenges and
31 obstacles to a small extent. Based on these, it is emphasized that the first and
32 important limitation is related to the non-extensive examination of this issue.
33 The relatively brief reference to limitations indicates that there is a wide
34 enough scope for future consideration. Therefore, it is useful to conduct an
35 extensive survey, which examines in all detail the challenges and obstacles in
36 the implementation of the DTL in the Cypriot school context.

37
38
39 **Impact**
40

41 Such research can offer a great deal to the education system of the country
42 in which it is conducted. Discovering the challenges and obstacles that can be
43 encountered in the implementation of DTL, with patience and proper
44 preparation, each teacher can find the right solutions for everyone. This will
45 make it easy to implement the DTL with all the positive results for all students
46 and, in general, for the Cypriot education system.

Conclusions

This text examines, without much detail, the challenges and obstacles that teachers encounter when trying to apply DTL in teaching, which is of great importance in the effective learning of students. The challenges and obstacles are many and negatively affect their teachers in their plans. However, for everything there are appropriate and radical solutions. The first of all is proper training. Persons with the required qualifications to be the whole of the trainers. They should take all the actions without exception for the organization of appropriate educational programs. These actions should be such as to attract and not repel the teachers. It is necessary for the latter to be able to obtain material suitable for teaching and to be able to attend practical and not only theoretical work.

Competent educational institutions, such as the Cyprus Pedagogical Institute, to take more seriously the organization of such programs and, at the same time, to find ways to attract teachers to attend, such as. providing a certificate of attendance, providing teaching aids and theoretical framework, attending a practical part and so on.

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