Defining Pedagogical Differentiation in Higher Education

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Abstract

The purpose of this paper is, through content analysis of 19 publications in the Greek and international literature in scientific texts, books, journal articles, and conferences, to investigate the conceptual content of pedagogical differentiation in higher education, as it emerges from the descriptions and discussion of authors, researchers, and experts. From the analysis, twelve dimensions or characteristics of pedagogical differentiation emerged that presented the highest frequency of occurrence in four broad categories. These are a. modification of the supportive learning context, meeting the needs of learners, and continuous improvement of the learning for all the learners who joined the category entitled "processes", b. student-centered teaching and learning, flexible learning context / flexible grouping and the possibility of learning option / multiple options as dimensions of a more general category called "context", c. the success and active participation of the learner in his learning, the development of life skills as well as the development of procedural knowledge skills that were included in the category called "learning outcomes" and d. the modification of "learning" products, the alternative / modern forms of assessment and the continuous assessment that were dimensions of the category "assessment". The results of the research show that the dimension with the highest frequency is a modification of the supportive learning context and follows in order of frequency of occurrence, the modification of learning "products" and meeting the needs of learners. Finally, the dimensions with the lowest frequency of occurrence include the continuous assessment and the development of procedural knowledge skills.

Keywords: pedagogical differentiation, dimensions of pedagogical differentiation, higher education

1. Introduction

Modern higher education is called to meet the different and varied needs of the learners, which are due to their different cultural and social origins. Pedagogical differentiation, a didactic approach focused on learners and aimed at eliminating inequalities, utilizing their different abilities, skills and learning styles can contribute significantly to meeting these needs (Chamberlin & Powers, 2010).

Pedagogical differentiation is a didactic practice of organizing teaching, to provide learners with many different learning options according to their different needs. Understanding the content, processing ideas and achieving the intended learning objectives can be accomplished by learners in a variety of ways (Tomlinson, 2001). Therefore, pedagogical differentiation using a variety of approaches and principles for organization, teaching, and assessment enables teachers to distance themselves from traditional teacher-centered frontal instruction leading a portion of learners to frustration and failure (Dosch & Zidon, 2014). By integrating pedagogical differentiation into curricula and its effective practice in higher education, the improvement of teaching methods, learning activities and assessments is achieved by maximizing the effectiveness of learners' learning (Subban, 2006).

The implementation of pedagogical differentiation in higher education has been studied in few studies, in relation to the studies conducted in primary and secondary education (Dosch & Zidon, 2014; Tulbure, 2011). The small number of studies reflects the limited practice of pedagogical differentiation in higher education due to the large number of learners in university departments, their few hours of interaction with teachers as well as the time-consuming and difficult planning of various ways of learners assessing, which adds an additional workload to teachers, who, in addition to their teaching, are engaged in research and scientific tasks (Ernst & Ernst, 2005).

This limited number of studies conducted on the implementation of pedagogical differentiation in higher education showed better academic performance of the learners to whom it was implemented compared to those whose teaching followed traditional methods and techniques (Graham, 2009). In these researches, various definitions of pedagogical differentiation are presented, which determine its individual characteristics or dimensions, reflecting their different views. It is important to determine in more detail the dimensions of pedagogical differentiation because its conceptual content will be clearer and with a better understanding of the term it can be used more effectively in higher education.

The purpose of this paper is to analyze the conceptual content of the term pedagogical differentiation in higher education through the study of material from scientific texts, books and articles in scientific journals and conferences, in order to determine the characteristics or otherwise the elements that constitute the term pedagogical differentiation in higher education. Initially, a conceptual map of the definition was designed and at the conclusion, a table of twelve dimensions of pedagogical differentiation related to the processes, the context, the learning outcomes and the assessment was produced.

2. Pedagogical Differentiation in Higher Education: A Theoretical Approach

Pedagogical differentiation is an innovative teaching practice, which by taking into account the differences in the readiness, interests, learning style and experiences of learners in higher education can bridge the gap between theory and practice (Tomlinson & Imbeau, 2010). Differences between learners in higher education have a catalytic effect on what learners need to learn, who will more fully acquire knowledge and maximize their skills by linking the curriculum to their different interests and experiences (Chamberlin & Powers, 2010). By accepting their differences, learners can participate effectively in group work by collaboratively cultivating their pedagogical skills and enhancing their personal development under the guidance of their teachers, who are responsible for the flexible formation of the various groups and the cooperation between them according to their readiness, interests or learning style. Furthermore, teachers organize their teaching appropriately addressing the different preferences of learners with the effective use of space, time and logistics infrastructure (Chamberlin & Powers, 2010). Pedagogical differentiation in higher education is based on the information of the learners by the teacher about what is necessary to learn about a subject in order to achieve the connection of the curriculum with teaching and assessment. In the context of its implementation, the assessment is continuous and constantly gives feedback to the teaching.

Due to the above positive effects, pedagogical differentiation is the subject of study by various researchers (Valiandes & Neophytou, 2017), without recording a complete identification of their views to accurately determine its content.

Indicatively, by Santangelo and Tomlinson (2009) pedagogical differentiation is recorded as the planning of learning experiences and adaptation by teachers, to meet the individual and diverse needs of learners and facilitate their success. Butler and Van Lowe (2010) consider that pedagogical differentiation is a way of thinking about teaching and learning of learners that supports the level of knowledge at which they are and which takes into account the readiness, interest and profile of learning. Also, Chamberlin and Powers (2010) note that pedagogical differentiation relies on flexible groupings, space, time, and materials to target instruction in subclasses throughout the classroom, which promotes convenience without overwhelming individualization effort. From Goodnough (2010) pedagogical differentiation is recorded as an approach to the organization of teaching and learning, which has the potential to offer learners a variety of learning options that meet different levels of readiness, interests and learning profiles. Symeonidou and Kyriakides (2010) state that pedagogical differentiation is the approach to the learning process in different ways, in order to take into account, the different needs, different possibilities and different ways of learning and expression of all learners, who differ in knowledge, skills, abilities, way of learning and expression and should be provided with equal educational opportunities which are a basic right of all learners. Ernest et al. (2011) characterize pedagogical differentiation as a continuous assessment by teachers of learning and learning activities that are of interest to each learner, and of individual / group work that enables each learner to experience many different roles and environments. Mok (2012) defines pedagogical differentiation as a teaching and learning process for learners with different abilities in the same classroom in order to maximize the development and individual success

of each learner. Pham (2012) considers pedagogical differentiation as an approach that enables teachers to examine a wide range of sources and select the ones that best suit learners. Tricarico and Yendol-Hoppey (2012) characterize pedagogical differentiation as an approach that recognizes the strengths and weaknesses of different learners as a basis for teaching by teachers, who adapt the content, process or "product" of teaching according to needs of the learners. By Joseph et al. (2013) pedagogical differentiation is recorded as an intentional and conscious method of planning and teaching to address the different needs of learners, with the aim of maximizing the potential of each learner. Dosch and Zidon (2014) consider that the educator's way of thinking according to which all learners respond differently to teaching is the basis of pedagogical differentiation. Griess and Keat (2014) record that pedagogical differentiation is a platform for implementing healthy pedagogical practice, encouraging an emotionally secure learning environment to address individual needs instead of accepting that all needs are the same. Dack (2015), considers that pedagogical differentiation is a philosophy of knowledge management that results from a responsive teaching to the readiness, interest, learning profile of each learner and his emotional needs. Evans-Hellman and Haney (2017) report that pedagogical differentiation is a different way of thinking compared to a typical standardized teaching method, which is based on a specific set of pedagogical perceptions of how learners acquire knowledge. Turner et al. (2017) believe that pedagogical differentiation touches on all aspects of teaching. Instructors inform learners what they need to learn about a topic in order to link the curriculum and teaching to assessment, responding to their differences. Instructors are also flexible in team building and work with learners in the learning process. All learners participate in assignments and are challenged to a level where their learning can be achieved through lessons that cultivate critical thinking and promote their individual development. Lesson plans are structured to address the variation of learners' preferences. The space, the time and the materials are implemented according to the needs of the different learners. Finally, Chen and Chen (2018) define pedagogical differentiation as an approach to teaching in which teachers modify the curriculum, teaching methods, resources, learning activities and learning outcomes to meet the different needs of each learner and their small groups to maximize their learning opportunity.

3. Methodology

A literature review was conducted in order to develop a list of those important components that various researchers, experts and authors use to define the concept of pedagogical differentiation in higher education. The method used was similar to that of Frey et al. (2012), who presented a conceptual analysis for authentic evaluation. Pedagogical differentiation was examined in specific subjects of higher education (Santangelo & Tomlinson, 2009; Goodnough, 2010; Ernest et al., 2011; Chen & Chen 2018). 19 publications have been found in journal articles, conferences, books and various scientific papers, in which various authors have defined pedagogical differentiation by giving various characteristics of it or by providing an unchanged definition of the process of pedagogical differentiation through which these characteristics emerge.

The aim was, through content analysis, to examine the concept of pedagogical differentiation in higher education through the descriptions and discussion of authors, researchers and experts.

4. Process of Identification of Dimensions of Pedagogical Differentiation

The identification of dimensions of pedagogical differentiation is subject to the subjective judgment of the researchers. Below there are some examples regarding the identification of some of these dimensions as they emerged from the original texts of the publications that were collected and examined.

"… Teachers who utilize differentiated instruction take into consideration multiple aspects of learners to best meet their educational needs … so that all learners respond to instruction…" (Dosch & Zidon, 2014: 344).

"… a pedagogical, not an organizational approach. It is a way that teachers modify teaching and learning routines…" (Chen & Chen, 2018: 89).

"… teachers may choose to differentiate their instruction with regard to content and learning process…" (Chamberlin & Powers, 2010: 115).

"… The approach of the learning process in different ways…" (Symeonidou & Kyriakides, 2010: 217).

The above were classified in the dimension Modification of the supportive learning context.

Below are some examples of phrases related to the definition of pedagogical differentiation which were classified in the dimension Meeting the needs of the learners.

"… a manner of a teacher responding to needs of individual students within the class…" (Lockley et al., 2017: 2).

"… Differentiation can be defined as an approach to teaching in which teachers… address the diverse needs of each student and small groups of students…" (Chen & Chen, 2018: 89).

"… to take into account the different needs of all learners…" (Symeonidou & Kyriakides, 2010: 217).

Then, for the dimension Continuous improvement of the learning for all the learners, the following three examples are given.

"… with the goal of maximizing the potential of each learner in a given area…" (Butler & Van Lowe, 2010: 2).

"… All students are expected to participate in respectful work …intended to promote individual growth …" (Turner et al., 2017: 491).

"… to maximize the learning opportunity for each student in a classroom" (Chen & Chen, 2018: 89).

For the dimension Student-centered teaching and learning the following three examples are

given.

"…Differentiation is teacher-based and student-centered…" (Butler & Van Lowe, 2010: 2).

"… Differentiated instruction is a platform for implementing sound pedagogical practice…" (Griess & Keat, 2014: 102).

"… a different way of thinking in comparison to a typical standardized method of teaching …is based around a specific set of attitudes about how children learn…" (Evans-Hellman & Haney, 2017: 29).

  Also, for the Flexible learning context / Flexible grouping dimension, the following two excerpts are listed.

"… differentiated instruction draws on flexible groupings, space, time and materials…" (Chamberlin & Powers, 2010: 115).

"… teachers are flexible with utilizing groups…" (Turner et al., 2017: 491).

In addition, the following three examples are given for the Possibility of learning option/multiple option dimension.

"… differentiation allows teachers to provide students choice in content…" (Bianchini & Brenner, 2009: 167).

"… an approach to organizing teaching and learning, that has the potential to offer learners a variety of learning options…" (Goodnough, 2010: 243).

"… to offer students multiple options for taking in information and making sense of ideas…" (Pham, 2012: 14).

Then, for the dimension Success and active participation of the learner in his learning, the following two examples are given.

"… to help each student be successful (Butler & Van Lowe, 2010: 2).

"… differentiated instruction reflects a philosophical approach to teaching that recognizes all learners have the right to be challenged and learn to the best of their ability in schools …" (Goodnough, 2010: 243).

Furthermore, for the Development of life skills dimension the following examples are given.

"… differentiated instruction encourages an emotionally safe environment for learning …" (Griess & Keat, 2014: 102).

"… a philosophy of data-driven, responsive teaching that attends to students' individual … affective needs …" (Dack, 2015: 2).

"… Teachers and students collaborate in the learning process…" (Turner et al., 2017: 491).

For the dimension Development of procedural knowledge skills the following excerpt is quoted:

"… educators typically envision… teaching…" (Butler & Van Lowe, 2010: 2).

The following three examples are given below for the Modification of learning "products" dimension.

"… Differentiation allows teachers to provide students choice in…'product'…" (Bianchini & Brenner, 2009: 167).

«…. teachers may choose to differentiate their instruction with regard to … learning product …with respect to students' readiness, interests or learning profile. (Chamberlin & Powers, 2010: 115).

"… an educator can differentiate …the 'products' that are being created by the students… (Evans-Hellman & Haney, 2017: 29).

In addition, for the Alternative /Modern forms of assessment dimension, three examples follow.

"… an approach that recognizes the strengths and weaknesses of diverse learners and requires the teacher to base in structural accommodations on student strengths and weaknesses …" (Tricarico & Yendol-Hoppey, 2012: 140).

"… diagnostic formative components are utilized to best understand personal characteristics of students and their academic skills: readiness, interest and learning profile" (Dosch & Zidon, 2014: 344).

"Teachers communicate to students what is essential to learn about a subject so as to link curriculum and instruction to assessment." (Turner et al., 2017: 490).

Furthermore, for the Continuous assessment dimension, the following excerpts are listed.

"… educators typically envision assessment…" (Butler & Van Lowe, 2010: 2).

"… teachers are providing ongoing assessment … for each student" (Ernest et al., 2011: 192).

In the early stages of the literature review, a conceptual map was created in which the key elements of pedagogical differentiation from each publication were noted. This helped to create labels for the number of items that were found. Common or similar elements of the definitions were entered in the same column, and as the study of the material was in progress and other elements emerged, the original categories were revised to include these new elements. This means that many similar elements have been combined in order to have a category, as the goal was to create as few categories as possible. In the end, twelve dimensions of pedagogical differentiation emerged and for each dimension it was presented the frequency of popularity, specifically calculating the relative frequency, in order to underline the significance of each element.

Figure 1 presents the conceptual map that shows the initial pilot identification of elements of pedagogical differentiation in higher education.

HIGHER EDUCATION

Reference	Processes	Context	Learning outcomes	Assessment
Santangelo & Tomlinson, 2009	Modification of the supportive learning context	Student–centered teaching and learning	Success and active participation of the learner in his learning	Modification of learning "products"
	Meeting the needs of the learners	Possibility of learning options		Alternative/ modern forms of assessment
	Continuous improvement of the learning for all the learners			
Butler & Van Lowe 2010	Modification of the supportive learning context	Student–centered teaching and learning	Development of procedural knowledge skills	Alternative/ modern forms of assessment
	Continuous improvement of the learning for all the learners		Success and active participation of the learner in his learning	Continuous assessment
Ernest et al. 2011	Modification of the supportive learning context	Flexible learning context	Development of life skills	Continuous assessment
Turner et al. 2017	Modification of the supportive learning context	Flexible learning context	Development of life skills	Alternative/ modern forms of assessment

Figure 1. Initial Pilot Identification of Elements of Pedagogical Differentiation

5. Results

The dimensions of pedagogical differentiation that were most reported in the publications were grouped into the following four categories:

a) Processes

- Modification of the supportive learning context

- Meeting the needs of the learners

- Continuous improvement of the learning for all the learners

b) Context

- Student-centered teaching and learning

- Flexible learning context / flexible grouping

- Possibility of learning option / multiple options

c) Learning outcomes

- Success and active participation of the learner in his learning

- Development of life skills

- Development of procedural knowledge skills

d) Assessment

- Modification of learning "products"

- Alternative / modern forms of assessment

- Continuous assessment

Table 1 contains the publications that were studied pedagogical differentiation in higher education. For any scientific text, article or book in which a dimension of pedagogical differentiation was part of the definition as it was presented in the publication, the cell associated with that dimension was shaded. Furthermore, the following table records the percentages that show the relative frequency of occurrence of each dimension of pedagogical differentiation.

6. Discussion

In higher education, from the 19 publications studied in the Greek and international literature, it appears that the dimensions with the highest frequency are the modification of the supportive learning context (100%) which belongs to the category "processes" and the modification of learning "products" (63.1%) belonging to the category "assessment" respectively. This is followed by the meeting the needs of the learners (42.1%) and the continuous improvement of the learning for all the learners (42.1%) which belongs to the category of "processes", the student-centered teaching and learning (31.5%) which belongs to the category "context", the alternative / modern forms of assessment (26.3%) which fall into the category of "assessment", the development of life skills (21%) and the success and active participation of the learner in his learning (21%) belonging to the category "learning outcomes", the flexible learning context / flexible grouping (21%) and the possibility of learning option / multiple options (15.7%) falling into the category "context", the continuous assessment (10.5%) which belongs to the category "assessment" and, finally, the development of procedural knowledge skills (5.2%) which belongs to the category "learning outcomes".

The dimension of the modification of the supportive learning context is the most basic feature of pedagogical differentiation in higher education, as it was recorded in all definitions in the surveys under consideration. Most researchers define pedagogical differentiation as a modification of content, learning process, or learning environment by teachers, depending on learners' readiness, interests, or learning profile (Chamberlin & Powers, 2010; Butler & Van Lowe, 2010; Williams-Black et al., 2010; Ernest et al., 2011; Mok, 2012; Tricarico & Yendol-

Hoppey, 2012; Joseph et al., 2013; Dack, 2015). Furthermore, many researchers focus on the change of pace, level and / or type of teaching, which responds to the learning differences of the learners (Bianchini & Brenner, 2009) ensuring equal opportunities in learning (Symeonidou & Kyriakides, 2010). It is a pedagogical, non-organizational approach to modifying teaching and learning routines (Chen & Chen, 2018), where space, time and materials are adapted to the needs of learners (Turner et al., 2017).

The dimension of modification of learning "products", although found with a much lower frequency than the previous dimension, seems to be an equally important feature of the definitions, as in many studies pedagogical differentiation is defined as a process in which teachers provide learners with choices in the "product" (Bianchini & Brenner, 2009), as a modification of the "products" of learning by teachers according to the readiness, interests or learning profile of the learners (Chamberlin & Powers, 2010) and as an adaptation of learning "products" (Dack, 2015).

The dimension of meeting the needs of the learners is another important feature of pedagogical differentiation, as many researchers refer to it in their definitions. Indicatively, Joseph et al., (2013) and Griess and Keat (2014) consider that it is the meeting of the individual and diverse needs of the learners by the teachers, Chen and Chen (2018) the answer to the different needs of the learners and small groups.

The dimension of continuous improvement of the learning for all learners is a dimension that is identified to the same extent as the dimension of meeting the needs of the learners in definitions or characteristics of pedagogical differentiation. This dimension is mentioned by several researchers as an important element of pedagogical differentiation as it aims to promote individual development (Turner et al., 2017) by maximizing potential (Butler & Van Lowe, 2010) and learning (Tricarico & Yendol- Hoppey, 2012) of each learner, increasing learning opportunities for all trainees (Chen & Chen, 2018).

The dimension of student-centered teaching and learning appears to a lesser extent than the previous two dimensions and is another feature of pedagogical differentiation according to several researchers, as it is defined as a platform for the implementation of sound pedagogical practice (Griess & Keat, 2014), as a different way of thinking compared to a typical standardized teaching method on how learners acquire knowledge (Evans-Hellman & Haney, 2017). Other scholars report that pedagogical differentiation is teacher-centered and focuses on the learner (Butler & Van Lowe, 2010), whom the educator respects (Evans-Hellman & Haney, 2017).

The alternative / modern forms of assessment dimension appears in an even smaller number of studies as a feature of pedagogical differentiation. Specifically, some researchers refer to their definitions that teachers have the ability to understand the levels of readiness, interest and learning profile of learners (Santangelo & Tomlinson, 2009), to recognize their strengths and weaknesses (Tricarico & Yendol-Hoppey, 2012), using diagnostic data for their personal characteristics and academic skills (Dosch & Zidon, 2014).

Table 1. The Dimensions of Pedagogical Differentiation in Higher Education

Categories	Processes			Context			Learning outcomes			Assessment		
Dimensions of pedagogical differentiation	Modification of the supportive learning context	Meeting the needs of the learners	Continuous improvement of the learning for all the learners	Student-centered teaching and learning	Flexible learning context/flexible grouping	Possibility of learning option/multiple options	Success and active participation of the learner in his learning	Development of life skills	Development of procedural knowledge skills	Modification of learning "products"	Alternative/modern forms of assessment	Continuous assessment
s/n — Percentage of occurrence of each dimension	100%	42,1%	42,1%	31,5%	21%	15,7%	21%	21%	5,2%	63,1%	26,3%	10,5%
1 — Bianchini & Brenner, 2009						■				■		
2 — Santangelo & Tomlinson, 2009	■		■		■		■			■		
3 — Butler & Van Lowe, 2010	■		■						■		■	■
4 — Chamberlin & Powers, 2010	■			■								
5 — Goodnoug, 2010	■				■	■						
6 — Symeonidou & Kyriakides, 2010	■											
7 — Williams-Black et al., 2010	■			■						■		
8 — Ernest et al., 2011	■			■				■				■
9 — Mok, 2012	■						■					
10 — Pham, 2012	■					■						
11 — Tricarico & Yendol-Hoppey, 2012	■		■							■		
12 — Joseph et al., 2013	■									■		
13 — Dosch & Zidon, 2014	■									■	■	
14 — Griess & Keat, 2014	■			■				■				
15 — Dack, 2015	■	■		■								
16 — Evans-Hellman & Haney, 2017	■			■								
17 — Lockley et al., 2017	■											
18 — Turner et al., 2017	■		■		■			■			■	
19 — Chen & Chen, 2018	■			■						■	■	

The dimensions of development of life skills, success and active participation of the learner in his learning and flexible learning context / flexible grouping appear to a lesser extent in the definitions of pedagogical differentiation. More specifically, the dimension of life skills development is recorded by some researchers as a feature of pedagogical differentiation, as it is a teaching that responds to the emotional needs of the learner (Dack, 2015), providing a safe learning environment (Griess & Keat, 2014) and cultivating collaboration in the learning process (Turner et al., 2017).

The dimension of success and active participation of the learner in his learning is another feature of pedagogical differentiation, as some researchers state in their definitions that this approach mobilizes all learners to acquire new knowledge (Butler & Van Lowe, 2010; Goodnough, 2010) and contributes to maximizing the development and individual success of learners (Mok, 2012).

The flexible learning context / flexible grouping dimension is mentioned by some researchers as an important feature of pedagogical differentiation. A flexible learning context is defined as a focus on learners' learning styles, preferences and interests (Williams-Black et al., 2010) and their ability to flexibly group (Turner et al., 2017).

The possibility of learning option / multiple options dimension appears to an even lesser extent in the definitions of pedagogical differentiation and according to a few researchers is defined as teaching that offers multiple options for information and understanding (Pham, 2012), as a variety of learning options for learners (Goodnough, 2010) and providing their teachers with choices in content and process (Bianchini & Brenner, 2009).

The dimensions of continuous assessment and development of procedural knowledge skills have an extremely small presence in the definitions of pedagogical differentiation. Regarding the continuous assessment dimension, a relatively small number of researchers report that this teaching practice is based on the continuous assessment of each learner's learning and learning activities (Ernest et al., 2011) and that teachers focus on assessment (Butler & Van Lowe, 2010) and for the dimension of development of procedural knowledge skills a small number of researchers point out that teachers focus on the development of specific skills (Butler & Van Lowe, 2010).

7. Conclusions

This study focused on the conceptual analysis of pedagogical differentiation in higher education by collecting and studying elements of pedagogical differentiation in books, scientific texts and articles in journals and conferences.

Through this analysis, twelve dimensions of pedagogical differentiation emerged, which were grouped into three in four broad categories. Specifically, the modification of the supportive learning context, meeting the needs of the learners and the continuous improvement of the learning for all the learners, were included in the category "processes". Student-centered teaching and learning, flexible learning context / flexible grouping and the possibility of

learning option / multiple options were included in the "context" category. Success and active participation of the learner in his learning, the development of life skills as well as the development of procedural knowledge skills were dimensions of the category "learning outcomes". Finally, modification of learning "products", alternative / modern forms of assessment and continuous assessment were dimensions of the "assessment" category.

In particular, from the category "processes" the dimension concerning the modification of the supportive learning context prevails, from the category "context" the dimension of student-centered teaching and learning stands out, from the category "learning outcomes" the dimensions concerning the development of life skills and the success and active participation of the learner in his learning prevail and, finally, in the category "assessment" the dimension concerning the modification of learning "products" prevails.

In particular, it follows from the processes that the modification of the supportive learning context prevails, as with the pedagogical differentiation the understanding of the content, the elaboration of ideas and the achievement of the intended learning objectives can be realized by the learners in various ways. The next dimension is meeting the needs of the learners, which characterizes the "processes" to a lesser extent than the previous dimension and concerns the response of the pedagogical differentiation to the different needs of the learners. In addition, in the same category, the continuous improvement of the learning for all learners is a dimension that is identified to the same extent as the dimension of meeting the needs of the learners in definitions or characteristics of pedagogical differentiation and contributes to increasing learning opportunities and maximizing the possibilities and learning of each learner to promote his individual development.

The dimension of student-centered teaching and learning stands out from the context category, as this particular teaching approach focuses on learners, enabling teachers to distance themselves from traditional frontal teaching that focuses on themselves and focus on eliminating inequalities between learners, utilizing their different abilities, skills and learning styles. To a lesser extent, the dimension related to the flexible learning context / flexible grouping appears and focuses on the forms of learning, the preferences and the interests of the learners but also on the possibility of their flexible grouping. The possibility of learning option / multiple options is the last dimension in this category, which is presented to an even lesser degree in the definitions of pedagogical differentiation compared to the aforementioned dimensions and concerns the offer of many different learning options to learners, according to their different needs.

In the category of learning outcomes, the success and active participation of the learner in his learning prevails, as it mobilizes all learners for the acquisition of new knowledge and contributes to maximizing the development and individual success of the trainees. In addition, to the same degree appears the dimension of the development of life skills, which is related to the emotional needs of the learner, the creation of a safe learning environment and the cultivation of cooperation in the learning process. On the other hand, the development of procedural knowledge skills is the last dimension in this category, it appears to a much lesser extent compared to the two previous dimensions and concerns teachers who focus on teaching

as a process.

Finally, in the category related to assessment, the dimension that prevails is the modification of learning "products", as through this modification the teachers provide the learners with the possibility of choices in their learning product. Alternative / modern forms of assessment is the dimension, which appears to a small extent and concerns the ability of teachers to understand the levels of readiness, interest and learning profile of learners, to identify their strengths and weaknesses using diagnostic data for their personal characteristics and their academic skills. This category is supplemented by the last dimension which appears to a much lesser extent compared to the other dimensions and refers to the continuous assessment of the learning and learning activities of each learner.

It follows that these dimensions of pedagogical differentiation are presented to varying degrees in different publications, reflecting the approaches of their authors. Therefore, with the contribution of more studies, a clearer conceptual content of pedagogical differentiation and a more complete approach to its dimensions in higher education is expected to be formed. The limitations of this study include the small number of researches under consideration which examined in higher education mainly in Greece, compared to the international field. Therefore, there is a need for further research to draw more adequate conclusions.

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