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An Investigation on the Perceptions of Primary School Teachers Related to the Implementation Levels of Differentiated Instruction*

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Abstract

The aim of this study is to determine the perceptions of primary school teachers related to the implementation levels of differentiated instruction, and to investigate these perceptions in terms of participating in in-service training for this approach, presence of students with different characteristic, graduated faculty, and gender. In the study, survey method as one of the quantitative research designs was employed. The study group of the research was composed of 703 primary school teachers selected by random sampling. The study data were gathered with "Differentiated Instruction Scale" developed by the researchers. The data gathered were subjected to descriptive and inferential statistics using the SPSS 18 software. As a result of the research, it was determined that the perceptions of primary school teachers related to the implementation of differentiated instruction were high. In addition, these perceptions of primary school teachers who participated in differentiated instruction training were significantly higher than those who did not, primary school teachers graduated from education faculties compared to those who graduated from other faculties, and female primary school teachers compared to men had higher perceptions of differentiated instruction. It was concluded that the perceptions of primary school teachers did not change significantly related to the presence of students with different characteristics in the classrooms. It is suggested that new studies should be carried out using the scale developed in this study and in-service training for differentiated instruction should be provided for teachers.

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Introduction

Students differ considerably in their characteristics of readiness, interest, cognitive ability, style, learning speed, socioeconomic status, culture, etc. due to their innate characteristics and the environment in which they were brought up. In the current Life Studies Curriculum in primary education, it is emphasized that students' tendencies, interests, desires, talents, economic status, ethnic origin and upbringing can differ (Milli Eğitim Bakanlığı [MEB / Turkish Ministry of National Education], 2018a). The Turkish Ministry of National Education (MoNE) expects teachers to identify and care about these differences of students within the scope of the competencies they should have, and to carry out development-based teaching (Dağlıoğlu, Turupcu-Doğan & Kolay, 2017). In addition, it is stated in the 2023 Education Vision Document published by the ministry that it is necessary to aim to take these differences of students into account at all education levels, to create environments for this aim and to carry out processes (MEB, 2018b). Moreover, fully effective teaching takes place by considering these differences (MEB, 2018c). When these differences are not taken into account, it will appeal to students whose learning process is at a moderate level, whose verbal intelligence and auditory learning are developed, and who prefer learning by listening from others, and not all students will be able to develop at the same level and reach the goals aimed (Avcı & Yüksel, 2018; MEB, 2018d; Özer & Yılmaz, 2016). In this case, the expectations and needs of students with different prior knowledge, interests and learning profiles will not be sufficiently met. As a matter of fact, the results of the exams held throughout the country, the attendance and dropout rates of students reveal that the current learning processes are insufficient to meet these expectations and needs (Özer & Yılmaz, 2016).

Apart from the differences of the students, there are also students with different characteristics such as inclusion in the learning environment, learning difficulties, socioeconomically disadvantaged and of foreign nationals. These differences make students disadvantaged compared to their peers in the process. Therefore, they may need more support, examples, practice and time. In this regard, it is necessary to take into account the expectations and needs of students with different characteristics. One of the approaches put forward in recent years to take these situations into account is inclusive education which was first introduced to include students with various disabilities or special education needs into normal education processes. Today, it comprises students with low economic status, disabilities, ethnic and cultural minorities, immigrants, refugees and asylum seekers, who are disadvantaged, compared to their peers in accessing educational, cultural, social and life processes (The United Nations Educational, Scientific and Cultural Organization [UNESCO], 2001). The aim is to provide these students with education in the same environment and under equal conditions as their peers. In this respect, inclusive education can be defined as "the process of responding to the different needs of students by increasing their participation in education, culture and society and reducing discrimination in education" (UNESCO, 2005, p.33). In this regard, the main purpose of inclusive education is to provide general education classes to all students, to serve them and not to exclude any student by creating appropriate conditions (UNESCO, 1994, 2009). In summary, inclusive education emerged to include students who need special education and other disadvantaged students but today it aims to embrace both disadvantaged and general students by taking into account all individual differences and differentiating teaching related to them.

One of the new approaches that welcome the inclusion of all students by considering their different characteristics in the learning environment is differentiated instruction, which was first introduced in the literature by Tomlinson (1995). Differentiated instruction is the planning, execution, and evaluation of the content, process, or product by considering students' readiness, interest, or profile (Drapeau, 2004; Gregory & Chapman, 2002; Tomlinson, 1999). In this respect, differentiated instruction is a teaching approach that meets different expectations and needs of students, motivates them and enables them to learn (Burkett, 2013; Butt & Kausar, 2010; Good, 2006). In this approach, teaching plans and strategies, topics, materials, activities, tasks, products are diversified, and students are given the opportunity to choose among them (Bearne, 1996; Dixon, Yssel, McConnell & Hardin, 2014; Tomlinson, 1999). A learning environment suitable for different levels of students and options suitable for their learning preferences are created, their interaction with each other is increased, they are required to take responsibility of their learning, and what is learned is made more meaningful by associating it with daily life (Avcı & Yüksel, 2018; Heacox, 2002; Tomlinson, 1999, 2014). The basis of this approach is to increase the perception of learning and respect differences (Şaldırdak, 2012) by helping each and every one of the students from the moment the teacher enters the classroom (Levy, 2008). Therefore, it is ensured that students sometimes work individually, in small groups, or as a whole class, depending on the conditions (Burkett, 2013; Tomlinson, 1999).

In differentiated instruction, planning is carried out in line with the individual differences of the students. Therefore, teachers should first know about the characteristics of their students (Özbal, 2016). This information about students can be obtained from student files, observations, and interviews with students and students' families (Demirkaya, 2018; Gregory & Chapman, 2002; Kaplan, 2016). In addition, preliminary assessments should be performed to identify students. (Akkaş, 2014; Aşiroğlu, 2016; Kaplan, 2016; Özbal, 2016). Then, it should be clarified which content, process, product will be differentiated with refence to the feature. Differentiating the content is to diversify the complexity or difficulty level of the subject related to the expectations and needs of the students and to use different materials accordingly (Chien, 2012; Tomlinson, 1999), which can be achieved by diversity, the use of more complex topics and materials, flexible time, acceleration, reorganization and intensification (Kaplan-Sayı, 2013). In order to differentiate the process, the activities can be arranged in line with the characteristics of the students, activities of varying difficulties can be offered, and support can be provided at different levels. In the meantime, a process evaluation is made to decide about the planning process of the following lessons. Differentiating the product is giving students options to show what they have learned while using materials for this aim (Taylor, 2015; Tomlinson, 2014) and diversifying the complexity of the product (Durrett, 2010). In this framework, individual studies, homogeneous or heterogeneous group studies, and graded product preparation can be used. In addition, students can be facilitated to exhibit their products verbally, in written form, visually, musically, physically or based on movement, and various materials can be used (Heacox, 2002; Tomlinson, 2014; Tomlinson & Strickland, 2005). Finally, information about students' learning and progress is obtained and the effectiveness of teaching is determined through post-teaching evaluations (Tomlinson, 2014).

Most of the differentiated instruction studies in the literature focus on the effect of this approach on students' academic success, self, motivation and attitude. However, studies examining teachers' perceptions of applying differentiated instruction are limited. Some of these studies (Aşiroğlu 2016; Aydoğan-Yenmez & Özpınar, 2017a; Çam, 2013; Demirkaya, 2018;

Öztürk & Mutlu, 2017; Whipple, 2012) report that teachers or prospective teachers have high perceptions of knowledge and practice regarding differentiated instruction but others (Brevik et al., 2018; Gray, 2008; Öztürk & Mutlu, 2017; Richards-Usher, 2013; Siam & Al-Natour, 2016; Smit & Humpert, 2012) report low level perceptions. In addition, only one of these studies (Demirkaya, 2018) aimed at determining primary school teachers' perceptions of applying differentiated instruction. In this respect, current research can contribute to the literature by comparing the new results on the examination of teachers' perceptions of differentiated teaching practice with previous different results and eliminating the limitation in the field of primary school teachers. In addition, these perceptions of teachers were examined through questionnaires in many studies in the literature (Aşiroğlu, 2016; Dugger, 2008; Öztürk & Mutlu, 2017; Siam & Al-Natour, 2016; Tomlinson & Allan, 2000; Whipple, 2012). In some studies (Coubergs, Struyven, Vanthournout & Engels, 2017; Çam, 2013; Demirkaya, 2018; Mutlu, Öztürk & Aktekin, 2019; Roy, Guay & Valois, 2013), scales related to this approach were developed and used. However, only one of these scales (Demirkaya, 2018) is for primary school teachers. Hence, it can be stated that there is a limitation of the differentiated instruction scale for primary schoolteachers in the literature and the scale developed in this research will contribute to eliminating this limitation. In addition, teacher training on differentiated instruction before and during service has been suggested in many studies in the literature. Some studies examined the effects of differentiated instruction training on prospective teachers (Butler & Lowe, 2010; Chamberlin & Powers, 2010; Chen, 2007; Joseph, Thomas, Simonette & Ramsook, 2013; Lockley, Jackson, Downing & Roberts, 2017; Ruys et al., 2013; Salar & Turgut, 2015). However, studies examining the practices or perceptions of primary school teachers who received in-service training on this approach (Aydoğan-Yenmez & Özpınar, 2017b; Kurnaz & Arslantaş, 2018) are quite limited. Within this regard, this research will be important in the literature in terms of determining the perceptions of the primary school teachers who participated in the in-service training of the Ministry of National Education for differentiated instruction and comparing them with those who did not.

In summary, there is a limitation of the research in the national literature in which a scale for primary school teachers is developed and their perceptions of applying differentiated instruction (Demirkaya, 2018) are examined. Therefore, this research with a differentiated instruction scale developed will contribute to the field in this respect and have an important place in the literature. In addition, examining these perceptions of primary school teachers in terms of participating or not in in-service training, having students with different characteristics or not may benefit the ministry, education faculties, administrators, planners, institutions and other stakeholders of education. In this context, the main purpose of this research is to determine the perceptions of primary school teachers about the application levels of differentiated instruction. Since it was determined in the literature that participating in in-service training for this approach increases the perception of practice (Burkett, 2013; De Neve & Devos, 2016; Dixon et al., 2014; Kurnaz & Arslantaş, 2018; Richards-Usher, 2013) and this training has been recommended to teachers and practiced by the Ministry of National Education since 2018, it is planned to examine these perceptions of primary school teachers in terms of their participation in in-service training. It is known that there are students with different characteristics in the classrooms, then it is aimed to examine the perceptions of the primary school teachers regarded to the presence of these students. Since it was determined in the literature that the perceptions of applying this approach among female primary school teachers were higher than males and did not change related to the type of faculty graduated

(Demirkaya, 2018), it was planned to examine these perceptions in terms of these variables and to compare them with the results of current studies. In this respect, this study sought to answer the following questions:

1. What are the perceptions of primary school teachers about their level of practice of differentiated instruction?
2. Do primary school teachers' perceptions of differentiated instruction practice levels differ significantly related to their participation in in-service training on this approach?
3. Do primary school teachers' perceptions of differentiated instruction practice levels differ significantly related to the presence of students with different characteristics?
4. Do primary school teachers' perceptions of differentiated instruction practice levels differ significantly related to the type of faculty they graduated from?
5. Do primary school teachers' perceptions of differentiated instruction practice levels differ significantly related to their gender?

Method

Research Design

In the research, the survey method which is one of quantitative research methods, was used to examine the perceptions of primary school teachers about the level of practice of differentiated instruction and how these perceptions change regarded to their participation in in-service training and having students with different characteristics, the type of faculty they graduated from, and their gender. The survey method usually consists of a large number of individuals and examines the views of these participants about a situation or the characteristics, interests, skills, abilities, attitudes, etc. (Büyüköztürk, Çakmak, Akgün, Karadeniz & Demirel, 2016) and the effect of the variables on these characteristics (Christensen, Johnson & Turner, 2015a). In this method, the researcher makes inferences about the universe in line with the determinations regarding the sampling (Creswell, 2016). In this context, the perceptions of primary school teachers about the application levels of differentiated instruction were determined by using the "Differential Instruction Scale" developed by the researchers.

Participants

The universe of the research consisted of 2257 primary school teachers working throughout the province of Trabzon in the 2018-2019 academic year. The sample of the study was determined by using the simple probability sampling method, in which the participants are randomly selected, and each participant has an equal chance of being selected (Büyüköztürk et al., 2016; Ekiz, 2015). This method allows generalizations to the population and, therefore, is preferred primarily in survey studies (Creswell, 2016). In this respect, the sample of this research consisted of 703 primary school teachers who were randomly selected and volunteered to fill out the Differentiated Instruction Scale. Thus, the sample of the study was limited to the defined participants. Information about the participants is presented in Table 1.

Table 1. *Information About Participants*

Variables	*Categories*	*N*	*%*
Differentiated instruction training	No	525	74,7
	Yes	178	25,3

Table 1. *(Cont.)*

Having students with different characteristics (foreign nationals, inclusion, learning difficulties, socioeconomically disadvantaged)	No	106	15,1
	Yes	597	84,9
Graduated Faculty	Education	539	76,7
	Others	164	23,3
Gender	Female	372	52,9
	Male	331	47,1

Table 1 reveals that some of the primary school teachers had differentiated instruction training, while others did not. Most of the participants had students with different characteristics in their class and graduated from the faculty of education. Finally, the number of female and male primary school teachers was similar.

Data Collection Tools

The data of the study were collected with and limited to the "Differential Instruction Scale" developed by the researchers. While developing this scale, the stages of forming an item-pool, presenting it to the expert opinion, pretesting and giving the final shape to the scale were followed (DeVellis, 2017). In this context, first of all, based on the basic elements of differentiated instruction, the scales (Coubergs et al., 2017; Çam, 2013; Roy et al., 2013) and questionnaires (Aşiroğlu, 2016; Dugger, 2008; Öztürk & Mutlu, 2017; Siam & Al-Natour, 2016; Whipple, 2012) developed for this approach in the literature were examined and "readiness, interest, cognitive abilities, learning speed, learning profile, socioeconomic level, learning environment, culture" were determined as sub-dimensions of the scale. Considering the principles of originality and redundancy, 72 items were written, and an item-pool was created. In accordance with the objectives of the research, it was decided that the scale would be a 5-point Likert type containing behavioral frequency and intensity in the time dimension. Each item was listed in an ascending order from never to always regarding the frequency of administration (Erkuş, 2014).

The draft scale was submitted for expert opinion to determine the adequacy (scope validity) of each item in measuring the behavior to be measured (Karasar, 2014), to examine the presentation style (face validity) (Cronbach, 1990), and to prevent the misleading evaluation by the person who developed it (Tavşancıl, 2004). In this respect, first of all, three experts in the fields of linguistics, measurement-evaluation, and primary school teacher education were asked to examine the expression, clarity and suitability of the items with the purpose of measurement. In line with their evaluations, eight items that were not suitable with the purpose and that were difficult to understand were removed from the draft scale. Next, the draft scale was presented to the opinion of four academicians who were experts in the field of differentiated instruction. In line with their opinion, 28 items were kept in the scale without change, 12 items were corrected, and 24 items were removed from the scale. In addition, the "assessment-evaluation" sub-dimension was added to the scale upon the suggestions of the experts and the necessity observed by the researchers. A 44-item final draft scale form was obtained with the additional four items for this sub-dimension.

The draft scale was ready for preliminary application following focus group interviews with seven primary school teachers and a pilot test with three primary school teachers. The preliminary application was carried out with 371 primary school teachers, taking into account the criteria that the participants should be at least 5 times the number of scale items (Bryman & Cramer, 1999), provided that the sample does not fall below 100, and that at least 300 people should be reached (Nunnally, 1978). First of all, the draft scale was transferred too online. Then, primary school teachers in 59 different provinces of Turkey were contacted via e-mail and personal web pages. The data obtained from these teachers were checked in terms of markings such as missing, crossed, sequential items (Erkuş, 2014) and transferred to the SPSS 18 program for the necessary analysis. Exploratory factor analysis was used at this stage as it provides careful repetition (Saucier & Goldberg, 1996) and is the most appropriate technique to use when there are few scales in the field (Cureton & Mulaik, 1975). Concerning this, first of all, KMO (Kaiser-Meyer-Olkin) and Bartlett Sphericity tests were performed to determine the suitability of the data set for this analysis. Considering that the KMO value is not less than 0.50 and gets perfect as it approaches 1.00 (Büyüköztürk, 2015; Field, 2000; Kaiser, 1974), it was decided that our value (KMO=0.956) was very good, and the sample size was sufficient. In addition, the result of the Bartlett Sphericity test was significant (Sig.=0.000; $p<0.05$) and the data showed normal distribution (Bartlett, 1954). Principal component analysis method was used because it is the most appropriate method when there are more than 30 items in factor analysis (Williams, Onsman & Brown, 2010). In order to determine the location of each item more accurately, the varimax rotation process was used. The Kaiser method was used to make the factors of the scale more specific. In addition, the Cronbach-Alpha value was calculated to determine the reliability of the scale. Items that had close values to each other in more than one factor were included in the factors that did not meet the criterion of at least three items, had a total correlation of less than 0.50 and increased reliability when not included were excluded from the scale. Finally, a scale consisting of six factors and 33 items was obtained. The final form of the scale consisted of items such as "differentiating activities according to students' abilities", "providing appropriate support for students from different cultures", "differentiating materials related to students' interests", "providing appropriate support for students with low family support in the classroom", "using assessment-evaluation tools suitable for different characteristics of students", and "arranging the physical environment of the classroom in accordance with the different characteristics of the students". Values related to the scale are presented in Table 2.

Table 2. *Values of the Differentiated Instruction Scale*

Factor	*Item Numbers*	*Eigenvalue*	*Percentage of Variance*	*Cronbach Alpha (pilot test)*	*Cronbach Alpha (main test)*
Student Characteristics	1-9	6,342	19,217	,94	,88
Culture	10-15	4,413	13,373	,90	,87
Readiness-Interest	16-21	3,777	11,446	,86	,88
Socioeconomic Level	22-25	3,477	10,536	,90	,87
Assessment-Evaluation	26-29	2,825	8,562	,92	,85
Learning Environment	30-33	2,805	8,501	,86	,82
Total Scale			71,635	,96	,95

With reference to the Kaiser method, the eigenvalues of the factors should be greater than 1 (Pallant, 2013). As seen in Table 2, all factors of the scale meet this requirement. In social sciences, all factors are expected to explain at least 50-60% of the total variance (Williams, Onsman & Brown, 2010) and this scale explains 71,635% of the total variance meeting this qualification. The Cronbach Alpha coefficient value, which shows the internal consistency of the scale between the test scores and whether the items can form a whole, should be above .70 (Büyüköztürk, 2015; Pallant, 2010). In this regard, the reliability coefficient of this scale (.96) is quite high. In addition, the reliability of the scale (Cronbach's Alpha Coefficient=0.95) was demonstrated again in the main test.

Data Collection and Analysis Process

The Differentiated Instruction Scale was applied face-to-face to 703 of 2257 primary school teachers determined with random sampling method in 18 districts of Trabzon in the 2018-2019 academic year. First, school administrators of the visited primary schools were given information about the process and presented the research permission. Then, within their knowledge, the research process was explained to the primary school teachers in the teacher's rooms and the volunteers were allowed to participate in the survey study.

Descriptive statistics were used to determine the perceptions of primary school teachers about the application levels of differentiated instruction. Descriptive statistics is used to organize and summarize the data obtained from the sample and to find values such as mean, standard deviation, etc. to represent all of the data (Christensen, Johnson & Turner, 2015b; Creswell, 2016; Ekiz, 2015). In this context, the perception data of the primary school teachers regarding the application levels of differentiated instruction were analyzed with the SPSS 18 program and the average scores for the scale and sub-dimensions were calculated. The formula of "array width/number of groups to be performed" was used to interpret the mean scores (Tekin, 1996). The array width was calculated as four by subtracting the lowest value (1) from the highest value (5) in the Differentiated Instructional Scale. It was preferred to show the perceptions of primary school teachers about the application levels of differentiated instruction in three categories. Thus, array width value was divided into three (4/3=1.33) and score intervals were determined. As a result, the perceptions of the participants regarding the level of practice were formed as "low" between 1.00-2.33, "average" between 2.34-3.67 and "high" between 3.68-5.00.

Inferential statistics were used to determine the effect of primary school teachers' participation in in-service training and having students with different characteristics, the type of faculty they graduated from, and their gender on their perceptions of the application levels of differentiated instruction. Inferential statistics is making inferences and predictions about the characteristics of the universe in line with the data obtained from the sample (Christensen, Johnson & Turner, 2015c; Ekiz, 2015). Since the skewness and kurtosis values of the data were between -1 and +1 (Ak, 2010; McKillup, 2012; Pallant, 2010; Tabachnick & Fidell, 2007) and the data showed normal distribution (Büyüköztürk et al., 2016; Creswell, 2016), parametric tests were used in the analyzes. The independent t-test was used to determine the significance of the difference between the means of two unrelated samples (Creswell, 2016; Çepni, 2010; Ekiz, 2015). Post Hoc tests were used to determine the source of the difference. Thus, the homogeneity of the variances was tested with the Levene's test and attention was paid to the fact that there was no significant difference between the variances ($p>0.05$). In the

homogeneity of variance, Scheffe test and unequal values were used for independent t test in cases where homogeneity was not provided (Ak, 2010).

Results

The results of the analysis carried out in order to determine the perceptions of primary school teachers about the level of practice of differentiated instruction and to examine these perceptions in terms of participating in in-service training, having students with different characteristics, graduated faculty and gender, and their interpretation are presented in this section.

Results of Primary School Teachers' Perceptions of Differentiated Teaching Application Levels

The results of the descriptive statistical analysis carried out to determine the perceptions of primary school teachers about the application levels of differentiated instruction are presented in Table 3.

Table 3. *Primary School Teachers' Perceptions of Differentiated Instruction Practice*

Factor	*N*	$\overline{X}$	*Ss*	*Level*
Student Characteristics	703	3,66	,55	Average
Culture	703	3,73	,70	High
Readiness-Interest	703	3,85	,60	High
Socioeconomic Level	703	3,98	,74	High
Assessment-Evaluation	703	3,86	,62	High
Learning Environment	703	3,93	,62	High
Total Scale	703	3,80	,49	High

Table 3 reveals that primary school teachers had a high perception of the level of applying differentiated instruction ($\bar{x}$=3.80). The participants' perceptions of differentiation towards culture, readiness-interest, socioeconomic level, assessment-evaluation and learning environment were also high. Their perceptions of differentiating instruction in relation to student characteristics are at an average level ($\bar{x}$=3.66).

Results of the Effect of Primary School Teachers' Participation in In-Service Training on Their Perceptions of Implementation Levels of Differentiated Instruction

The results of the independent t-test analysis on whether the perceptions of the primary school teachers regarding the practice differ statistically in accordance with their participation in differentiated instruction training are presented in Table 4.

Table 4. *The Effect of Primary School Teachers' Participation in In-Service Training on Perceptions of Differentiated Instruction Practice Levels*

Factor	*Training*	*N*	$\overline{X}$	*Ss*	*Levene's Test*		*sd*	*t*	*p*
					F	*p*			
Student Characteristics	Yes	178	3,89	,53	,022	,883	701	6,612	,000
	No	525	3,58	,54					

Table 4.(Cont.)

Culture	Yes	178	4,05	,61	3,056	,081	701	7,251	,000
	No	525	3,63	,69					
Readiness-Interest	Yes	178	4,03	,54	2,136	,144	701	4,769	,000
	No	525	3,79	,61					
Socioeconomic Level	Yes	178	4,14	,73	,271	,602	701	3,371	,001
	No	525	3,93	,73					
Assessment-Evaluation	Yes	178	4,05	,59	1,377	,241	701	4,840	,000
	No	525	3,79	,62					
Learning Environment	Yes	178	4,12	,58	,024	,878	701	4,793	,000
	No	525	3,87	,62					
Total Scale	Yes	178	4,02	,46	,142	,707	701	7,090	,000
	No	525	3,73	,48					

Table 4 reveals that the perceptions of primary school teachers who participated in in-service training towards applying differentiated instruction in all dimensions were significantly higher than those who did not participate ($p<0.05$).

Results of the Effects of Primary School Teachers' Having Students with Different Characteristics on Their Perceptions of Differentiated Instruction Practice Levels

The results of the independent t-test analysis on whether the perceptions of the primary school teachers regarding the practice differ statistically in line with the presence of students with different characteristics are presented in Table 5.

Table 5. *The Effect of Primary School Teachers' Having Students with Different Characteristics on Their Perceptions of Differentiated Instruction Application Levels*

Factor	*Training*	*N*	$\overline{X}$	*Ss*	*Levene's Test*		*sd*	*t*	*p*
					F	*p*			
Student Characteristics	No	106	3,78	,50	2,513	,113	701	2,435	,015
	Yes	597	3,63	,56					
Culture	No	106	3,78	,75	,870	,351	701	,679	,497
	Yes	597	3,73	,68					
Readiness-Interest	No	106	3,90	,57	1,782	,182	701	,972	,331
	Yes	597	3,84	,61					
Socioeconomic Level	No	106	3,91	,76	,544	,461	701	-1,132	,258
	Yes	597	4,00	,74					
Assessment-Evaluation	No	106	3,86	,58	1,568	,211	701	,058	,954
	Yes	597	3,85	,63					

Table 5. *(Cont.)*

Learning Environment	No	106	3,97	,57	4,239	,040	153,671	,675	,500
	Yes	597	3,93	,63					
Total Scale	No	106	3,85	,48	,489	,484	701	1,032	,303
	Yes	597	3,80	,50					

Table 5 reveals that the perception of differentiated instruction in the dimension of student characteristics was significantly higher than those who did not have students with different characteristics ($p<0.05$). There was no significant difference in the other dimensions in the perception levels of primary school teachers towards applying differentiated instruction in accordance with the presence of students with different characteristics.

Results of the Effects of Primary School Teachers' Perceptions of the Type of Faculty They Graduated from on the Application Levels of Differentiated Instruction

The results of the independent t-test analysis on whether the perceptions of the primary school teachers about applying differentiated instruction in line with the type of faculty they graduated from are statistically different are presented in Table 6.

Table 6. *The Effect of Primary School Teachers' Perceptions of the Type of Faculty They Graduated from on the Application Levels of Differentiated Instruction*

Factor	*Faculty*	*N*	$\overline{X}$	*Ss*	*Levene's Test*		*sd*	*t*	*p*
					F	*p*			
Student Characteristics	Education	539	3,69	,55	,488	,485	701	3,243	,001
	Others	164	3,53	,56					
Culture	Education	539	3,76	,69	,016	,899	701	1,642	,101
	Others	164	3,66	,71					
Readiness-Interest	Education	539	3,88	,59	,795	,373	701	2,545	,011
	Others	164	3,74	,64					
Socioeconomic Level	Education	539	3,97	,75	,250	,617	701	-,578	,563
	Others	164	4,01	,70					
Assessment-Evaluation	Education	539	3,85	,63	,319	,573	701	-,177	,860
	Others	164	3,86	,61					
Learning Environment	Education	539	3,96	,61	2,488	,115	701	2,305	,021
	Others	164	3,83	,67					
Total Scale	Education	539	3,82	,49	,057	,812	701	2,192	,029
	Others	164	3,73	,50					

Table 6 reveals that primary school teachers who graduated from education faculties had significantly higher perceptions of differentiation in terms of student characteristics, readiness-interest and learning environment compared to those who graduated from other faculties ($p<0.05$). There was no significant difference in the perception levels of primary school teachers towards applying differentiated instruction related to the type of faculty they graduated from in the dimensions of culture, socioeconomic level and assessment-evaluation.

Results of the Effects of Primary School Teachers' Gender on Their Perceptions of Differentiated Instruction Practice Levels

The results of the independent t-test analysis on whether the perceptions of the primary school teachers about applying differentiated instruction show statistical differences related to gender are presented in Table 7.

Table 7. *The Effect of Primary School Teachers' Gender on Their Perceptions of Differentiated Instruction Practice Levels*

Factor	*Gender*	*N*	$\overline{X}$	*Ss*	*Levene's Test*		*sd*	*t*	*p*
					F	*p*			
Student Characteristics	Female	372	3,73	,51	8,573	,004	653,698	3,713	,000
	Male	331	3,57	,59					
Culture	Female	372	3,80	,65	4,641	,032	665,917	2,705	,007
	Male	331	3,66	,73					
Readiness-Interest	Female	372	3,93	,56	3,061	,081	701	3,987	,000
	Male	331	3,75	,63					
Socioeconomic Level	Female	372	4,11	,71	1,657	,198	701	4,915	,000
	Male	331	3,84	,75					
Assessment-Evaluation	Female	372	3,92	,61	,670	,413	701	2,934	,003
	Male	331	3,78	,63					
Learning Environment	Female	372	4,00	,61	1,394	,238	701	2,914	,004
	Male	331	3,86	,63					
Total Scale	Female	372	3,88	,45	6,574	,011	657,613	4,533	,000
	Male	331	3,71	,52					

Table 7 reveals that female primary school teachers' perceptions of applying differentiated instruction in all dimensions were significantly higher than male teachers ($p<0.05$).

Discussion, Conclusion and Implications

This study is limited to revealing the perceptions of 703 classroom teachers working in the province of Trabzon towards differentiated instruction by using the Differentiated Instruction Scale. In the study, the perceptions of primary school teachers about the implementation levels

of differentiated instruction were high. The perceptions of primary school teachers were determined as high in only one study in the national literature in this field (Demirkaya, 2018). In addition, secondary school teachers (Çam, 2013), primary and secondary school teachers teaching gifted students (Eren-Tuzkan, 2019), teachers working in primary, secondary and high schools (Kozikoğlu & Bekler, 2018), social studies and history teachers (Öztürk & Mutlu, 2017) were determined to have a high perception of applying differentiated instruction. In some studies, in the international literature (Burkett, 2013; Garrett, 2017; Richards-Usher, 2013; Whipple, 2012), primary school teachers had a high perception of applying differentiated instruction. Davis (2013) determined that these perceptions of primary school teachers were partially sufficient, while Ismajli and Imami-Morina (2018) determined that they were insufficient. In addition, Siam and Al Natour (2016) found that primary and secondary school teachers had low perceptions of these. In summary, it can be stated that teachers' and primary school teachers' perceptions of applying differentiated instruction are generally high and that the results of this research support the literature.

In this study, primary school teachers' perceptions of differentiated instruction practice levels were high in the readiness-interest dimension. There are studies in the literature in which primary school teachers have a high perception of this dimension (Ismajli &Imami-Morina, 2018; Whipple, 2012). In addition, primary school teachers had a high perception of differentiating assessment-evaluation. Similar results were reached in the studies conducted with primary school teachers (Demirkaya, 2018; Whipple, 2012), secondary school teachers (Çam, 2013), and primary, secondary, and high school teachers (Kozikoğlu & Bekler, 2018). However, Ismajli and Imami-Morina (2018) determined that primary school teachers' perceptions of differentiating assessment were moderate, while Gaitas and Martins (2017) found that they thought they had difficulty in differentiation. In this study, it was determined that primary school teachers had a high perception of differentiating the learning environment. The only study in the literature (Gaitas & Martins, 2017) also revealed that these perceptions of primary school teachers were high. Further, Kozikoğlu and Bekler (2018) determined that teachers working in primary, secondary and high schools have a high perception level of differentiating the learning environment. However, branch teachers' perception of differentiating the classroom environment was low in Çam's (2013) study. This finding of the study is similar to the literature and the differences in some results can be examined with new studies. In addition, it was determined in this study that primary school teachers' perceptions of applying differentiated instruction were at a moderate level only in the dimension of student characteristics, which consists of items related to cognitive ability, learning profile and learning speed. Similarly, Çam (2013) determined that secondary school teachers' perceptions of adapting teaching in accordance with these individual differences of students were at a moderate level. However, Kozikoğlu and Bekler (2018) determined that the perceptions of teachers working in primary, secondary and high schools are high. In this context, the findings on the perception of differentiating instruction differ in the literature, which can be examined with new studies.

In this study, the primary school teachers who participated in the in-service training had significantly higher perceptions of applying differentiated instruction. In addition, a significant difference was found in all sub-dimensions in this direction. It is revealed in the literature (Burkett, 2013; De Neve & Devos, 2016; Dixon et al., 2014; Kurnaz & Arslantaş, 2018; Richards-Usher, 2013) that the perception of applying this approach is high among primary school

teachers who receive training for differentiated instruction. As a matter of fact, when teachers do not receive training for this approach, they cannot differentiate teaching sufficiently (Gray, 2008). Therefore, it can be stated that participating in in-service training increases teachers' perceptions of applying differentiated instruction and this finding of the research supports the literature.

In this study, the perceptions of primary school teachers applying differentiated instruction did not differ significantly according to the presence of students with different characteristics. It was determined that teachers who did not have students with different characteristics had a higher perception of differentiation towards student characteristics than those who instructed students with different characteristics. The literature lacks studies examining teachers' perceptions of applying differentiated instruction in terms of whether they have students with different characteristics. However, Şimşek (2019) determined that social studies teachers' self-efficacy towards inclusive education did not differ significantly in accordance with the presence of students with different characteristics in their classes. Thus, it can be stated that this finding of the study is similar to the literature.

In this study, the perceptions of the primary school teachers who graduated from the faculty of education to apply differentiated instruction were significantly higher than the perceptions of those who graduated from other faculties. There is only one study in the literature that examined teachers' perceptions of applying differentiated instruction in terms of the type of faculty they graduated from. In the study conducted by Demirkaya (2018), however, there was no significant difference in the perceptions of primary school teachers in applying differentiated instruction according to the type of faculty they graduated from. Therefore, this finding of the study differs from the finding of the only study in the literature, which can be attributed to the fact that the studies were carried out in different regions and with different samples.

In this study, female primary school teachers' perceptions of applying differentiated instruction were significantly higher than those of males. In addition, a significant difference was found in all sub-dimensions in this direction. There was only one study in the literature in which the perceptions of primary school teachers in applying differentiated instruction were examined in terms of gender. In this study conducted by Demirkaya (2018), the perceptions of female primary school teachers were higher as well. In this respect, this finding coincides with the finding of the only study with the same sample group. There are also studies in which the perceptions of teachers working at different teaching levels were examined in terms of gender. Eren-Tuzkan (2019) concluded that female primary and secondary school teachers who teach gifted students have higher perceptions of applying differentiated instruction than male teachers. Further Bayram (2019) determined that female social studies teachers differentiate teaching activities better than males. However, Öztürk and Mutlu (2017) determined that social studies and history teachers' perceptions of applying differentiated instruction did not differ significantly in relation to gender. Similarly, King (2010) determined that these perceptions of high school teachers did not differ in terms of gender. In addition, Kozikoğlu and Bekler (2018) determined that primary, secondary and high school teachers' perceptions of applying differentiated instruction did not change significantly related to gender. Therefore, this finding of the research shows both similarities and differences with the findings of the studies conducted with branch teachers. This situation is remarkable in order to include the gender variable in future studies and to better explain the effect of this variable on the perception of

applying differentiated instruction. The following recommendations can be made in line with these results of the study:

- Considering the limitations of the studies examining primary school teachers' perceptions of applying differentiated instruction and using the scale developed in this study, further studies on this subject can be conducted in other provinces or regions and they can be compared with the results of this study.
- Considering the positive effect of participating in in-service training on primary school teachers' perceptions of applying differentiated instruction, in-service training on this topic can be widespread and it can be provided to teacher candidates during their undergraduate education.
- Considering that the perceptions of primary school teachers towards implementing differentiated instruction do not change in accordance with the participation in in-service training, being a graduate of education faculty, gender, and instructing students with different characteristics, the effects of these and similar variables can be studied further in researches and compared with the results of the studies in the literature.
- Qualitative research through interviews or observations can be carried out to determine to what extent the primary school teachers reflect their perceptions of differentiated teaching practice levels into the teaching environment.

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TÜRKÇE GENİŞ ÖZET

Sınıf Öğretmenlerinin Farklılaştırılmış Öğretimi Uygulama Düzeylerine Yönelik Algılarının İncelenmesi

Giriş

Öğrenciler, doğuştan gelen özelliklerinden ve yetiştikleri çevreden ötürü bireysel farklılıklar göstermektedir. Öğrenme ortamında öğrencilerin bu farklılıklarını dikkate alan yaklaşımlardan birisi, farklılaştırılmış öğretim yaklaşımıdır. Bu yaklaşım; içeriğin, sürecin veya ürünün öğrencilerin hazırbulunuşluğunun, ilgisinin veya profilinin dikkate alınarak planlanması, yürütülmesi, değerlendirilmesidir (Drapeau, 2004; Gregory & Chapman, 2002; Tomlinson, 1999). Bu kapsamda farklılaştırılmış öğretim; öğrencilerin farklı beklentilerini ve ihtiyaçlarını karşılayan, bunun sonucunda onları motive eden ve öğrenmelerini sağlayan öğretme yaklaşımıdır (Burkett, 2013; Butt & Kausar, 2010; Good, 2006). Bu bakımdan öğrencilerin farklı düzeylerine uygun öğrenme ortamı ve öğrenme tercihlerine uygun seçenekler oluşturulur, birbirleriyle etkileşimi artırılır, öğrenmelerinin sorumluluğunu alması sağlanır, öğrenilenler günlük yaşamla ilişkilendirilerek daha anlamlı kılınır (Avcı & Yüksel, 2018; Heacox, 2002; Tomlinson, 1999, 2014).

Literatür incelendiğinde sınıf öğretmenlerine yönelik ölçek geliştirilen ve onların farklılaştırılmış öğretimi uygulama algılarının incelendiği araştırma (Demirkaya, 2018) sınırlılığı bulunduğu görülmüştür. Bu kapsamda bu araştırmanın alana katkı sağlayacağı ve literatürde önemli yer tutacağı belirtilebilir. Ayrıca bu araştırmada sınıf öğretmenlerinin bu algılarının hizmet içi eğitime katılma veya katılmama, farklı özellikli öğrencisi bulunma ya da bulunmama durumu bakımından incelenmesi eğitim paydaşlarına fayda sağlayabilir. Bu bağlamda bu araştırmanın temel amacı, sınıf öğretmenlerinin farklılaştırılmış öğretimi uygulama düzeylerine ilişkin algılarının belirlenmesidir. Literatürde bu yaklaşıma yönelik hizmet içi eğitime katılmanın uygulama algısını artırdığını belirlenmesinden (Burkett, 2013; De Neve & Devos, 2016; Dixon vd., 2014; Kurnaz & Arslantaş, 2018; Richards-Usher, 2013), sıklıkla öğretmenlere bu eğitimin sunulmasının önerilmesinden ve 2018 yılından itibaren bakanlığın bunu gerçekleştirmesinden ötürü sınıf öğretmenlerinin bu algılarının hizmet içi eğitime katılma durumu bakımından incelenmesi planlanmıştır. Son yıllarda sınıflardaki farklı özellikli öğrenci sayısının hızla artmasından dolayı sınıf öğretmenlerinin bu algılarının bu öğrencilerin bulunması durumuna göre de incelenmesi amaçlanmıştır. Literatürde bu yaklaşımı uygulama algılarının kadın sınıf öğretmenlerinde erkeklerden yüksek olduğu, mezun olunan fakülte türüne göre değişmediği belirlendiğinden (Demirkaya, 2018), bu algıların bu değişkenler açısından da incelenmesi ve mevcut araştırmaların sonuçları ile karşılaştırılması planlanmıştır.

Yöntem

Araştırmada; sınıf öğretmenlerinin farklılaştırılmış öğretimi uygulama düzeylerine yönelik algılarının ve bu algılarının hizmet içi eğitime katılma ve farklı özelliklerde öğrencisi bulunması durumuna, mezun olunan fakülte türüne, cinsiyete göre nasıl değiştiğinin sayısal ve istatiksel yollarla incelenmesi için nicel araştırma desenlerinden tarama yöntemi kullanılmıştır. Araştırmanın evrenini 2018-2019 eğitim-öğretim yılında Trabzon ili genelinde görev yapan 2257 sınıf öğretmeni oluşturmuştur. Araştırmanın örneklemi, evrenden olasılığa dayalı örnekleme yöntemlerinden basit olasılıklı örnekleme yöntemi kullanılarak belirlenen 703 sınıf öğretmenidir.

Araştırmanın verileri, araştırmacılar tarafından geliştirilen Farklılaştırılmış Öğretim Ölçeğinin örnekleme yüz yüze uygulanması ile toplanmıştır. Sınıf öğretmenlerinin farklılaştırılmış öğretimi uygulama düzeylerine yönelik algılarının belirlenmesi için betimsel istatistikten yararlanılmıştır. Sınıf öğretmenlerinin hizmet içi eğitime katılma ve farklı özellikli öğrencisi bulunma durumunun, mezun olduğu fakülte türünün, cinsiyetinin, farklılaştırılmış öğretimi uygulama düzeylerine yönelik algılarına etkisini belirlemek için ise çıkarımsal istatistik işe koşulmuştur.

Bulgular

Araştırmada sınıf öğretmenlerinin farklılaştırılmış öğretimi uygulama düzeylerine yönelik algılarının yüksek olduğu görülmüştür. Ayrıca araştırmada, hizmet içi eğitime katılan sınıf öğretmenlerinin katılmayanlara; eğitim fakültesi mezunu olanların diğer fakültelerden mezun olanlara; kadın sınıf öğretmenlerinin erkeklere göre bu algılarının anlamlı olarak daha yüksek olduğu anlaşılmıştır. Sınıf öğretmenlerinin bu algılarının farklı özellikli öğrencisi bulunma durumuna göre ise anlamlı olarak farklılık göstermediği belirlenmiştir.

Tartışma, Sonuç ve Öneriler

Araştırmada sınıf öğretmenlerinin farklılaştırılmış öğretimi uygulama düzeylerine yönelik algılarının yüksek olduğu belirlenmiştir. Alana ilişkin ulusal literatürdeki tek araştırmada (Demirkaya, 2018) da sınıf öğretmenlerinin bu algılarının yüksek olduğu tespit edilmiştir. Ayrıca Çam (2013) ortaokul öğretmenlerinin, Öztürk ve Mutlu (2017) ise, sosyal bilgiler ve tarih öğretmenlerinin bu algılarının yüksek olduğunu belirlemiştir. Uluslararası literatürde bazı araştırmalarda (Burkett, 2013; Garrett, 2017; Richards-Usher, 2013; Whipple, 2012) da sınıf öğretmenlerinin bu algılarının yüksek olduğu tespit edilmiştir. Fakat Davis (2013) sınıf öğretmenlerinin bu algılarının kısmen yeterli olduğunu, Ismajli ve Imami-Morina (2018) ise yeterli olmadığını belirlemiştir. Bunların yanında Siam ve Al Natour (2016) da ilkokul ve ortaokul öğretmenlerinin bu algılarının düşük olduğunu tespit etmiştir. Özetle literatürde hem öğretmenlerin hem de sınıf öğretmenlerinin bu algılarının genellikle yüksek olduğu ve bu araştırma sonucunun bunu desteklediği belirtilebilir.

Bu araştırmada hizmet içi eğitime katılan sınıf öğretmenlerinin farklılaştırılmış öğretimi uygulama algılarının anlamlı olarak daha yüksek olduğu belirlenmiştir. Literatür incelendiğinde yapılan araştırmalarda (Burkett, 2013; De Neve & Devos, 2016; Dixon vd., 2014; Kurnaz & Arslantaş, 2018; Richards-Usher, 2013) farklılaştırılmış öğretime yönelik eğitim alan sınıf öğretmenlerinin bu yaklaşımı uygulama algılarının yüksek olduğu görülmektedir. Bu kapsamda hizmet içi eğitime katılmanın öğretmenlerin farklılaştırılmış öğretimi uygulama algılarını artırdığı ve araştırmanın bu bulgusunun literatürü desteklediği belirtilebilir.

Araştırmada sınıf öğretmenlerinin farklılaştırılmış öğretimi uygulama algılarının farklı özellikli öğrencisi bulunma durumuna göre anlamlı olarak farklılaşmadığı görülmüştür. Şimşek (2019),

sosyal bilgiler öğretmenlerinin kapsayıcı eğitime yönelik öz yeterliklerinin sınıflarında farklı özellikli öğrenci bulunmasına göre anlamlı farklılık göstermediğini belirlemiştir. Bu bakımdan araştırmanın bu bulgusunun literatür ile benzeştiği ifade edilebilir.

Bu araştırmada eğitim fakültesi mezunu olan sınıf öğretmenlerinin farklılaştırılmış öğretimi uygulama algılarının diğer fakültelerden mezun olanların algılarına göre anlamlı olarak daha yüksek olduğu belirlenmiştir. Literatürdeki bu duruma yönelik tek araştırmada (Demirkaya, 2018) ise, mezun olunan fakülte türüne göre sınıf öğretmenlerinin bu algılarında anlamlı farklılık oluşmamıştır. Bu bakımdan araştırmanın bu bulgusunun literatürdeki tek araştırmanın bulgusundan farklılaştığı belirtilebilir. Bu farklılık, araştırmaların farklı bölgelerde ve örneklemlerle gerçekleştirilmesine bağlanabilir.

Araştırmada kadın sınıf öğretmenlerinin farklılaştırılmış öğretimi uygulama algılarının erkeklere göre anlamlı olarak daha yüksek olduğu belirlenmiştir. Literatürdeki bu duruma yönelik tek araştırmada (Demirkaya, 2018) da kadın sınıf öğretmenlerin algılarının daha yüksek olduğu bulgusuna ulaşılmıştır. Bu bakımdan araştırmanın bu bulgusunun örneklem grubu aynı olan tek araştırmanın bulgusu ile örtüştüğü ifade edilebilir.

Araştırmanın bu sonuçları doğrultusunda şu önerilerde bulunulabilir:

- Sınıf öğretmenlerinin farklılaştırılmış öğretimi uygulamaya yönelik algılarını inceleyen araştırmaların sınırlılığı dikkate alınarak ve bu araştırmada geliştirilen ölçek kullanılarak başka illerde veya bölgelerde bu duruma ilişkin yeni çalışmalar yapılabilir ve bu araştırmanın sonuçları ile karşılaştırılabilir.
- Hizmet içi eğitime katılmanın sınıf öğretmenlerinin farklılaştırılmış öğretimi uygulama algılarına olumlu etkisi göz önünde bulundurularak bu yaklaşıma ilişkin hizmet içi eğitimler yaygınlaştırılabilir. Ayrıca bu eğitim, öğretmen adaylarına da lisans öğrenimlerinde verilebilir.
- Sınıf öğretmenlerinin farklılaştırılmış öğretimi uygulamaya yönelik algılarının hizmet içi eğitime katılmaya, eğitim fakültesi mezunu olmaya, cinsiyete göre değiştiği; farklı özellikli öğrencisi bulunmaya göre değişmediği dikkate alınarak yapılacak yeni araştırmalarda bu ve benzeri değişkenlerin etkisine bakılabilir ve yapılan araştırmaların sonuçları ile karşılaştırılabilir.
- Sınıf öğretmenlerinin farklılaştırılmış öğretimi uygulama düzeylerine yönelik algılarını öğretim ortamına yansıtıp yansıtamadıklarını belirlemek için görüşme veya gözlemden yararlanarak nitel araştırmalar gerçekleştirilebilir.