INASED Publishing

International Journal of Progressive Education

1554 - 3210

IJPE

INASED Published ©

ijpe.inased.org

IJPE International Journal of Progressive Education

Volume 18 Number 4 August 2022

DOI: 10.29329/ijpe.2022.439

An International Journal Published by International Association of Educators (INASED)

International Journal of Progressive Education

Frequency: Six times a year.

ISSN: 1554-5210

Owner & Publisher: International Association of Educators

Indexing/Abstracting:

1. **OCLC-WorldCat**: http://www.oclc.org/worldcat/default.htm
2. **Directory of Open Access Journals**: (DOAJ): http://www.doaj.org/home
3. **EBSCO Publication**: http://www.ebsco.com
4. **Cabell's Directory of Publishing**: http://www.cabells.com
5. **ERIC**: http://www.eric.ed.gov
6. **ERIH Plus:** https://dbh.nsd.uib.no/publiseringskanaler/erihplus/

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Academic Entitlement Expectations of Preservice Primary School Teachers

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Abstract

The aim of this study is to examine whether the academic entitlement expectations of preservice teachers studying at primary school level differ according to their gender, grade level and the type of university they attend (public or foundation). The sample consists of a total of 397 preservice primary school teachers in one foundation and one public university. The data were collected with the "Academic Entitlement Expectation Scale", after assessing the validity and reliability of the instrument. The independent samples t-test was performed to analyze whether the preservice primary school teachers' academic entitlement expectations differed according to the variables of gender and type of university; while one-way analysis of variance (ANOVA) was used to determine whether they differed according to the grade level variable. In the study, it was found that academic entitlement expectations of male students compared to female students; students attending the foundation university compared to those at the public university, and students in the first grade compared to those in the fourth grade were higher.

Keywords: Academic Entitlement, Higher Education, Teacher Candidates, Gender, Grade Level, University Type.

DOI: 10.29329/ijpe.2022.459.1

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INTRODUCTION

While globalization has on the one hand provided an opportunity for development in political, economic, social and cultural terms, on the other hand, it has led to the emergence of certain problems that threaten both personal and social life (Altıntaş, 2012). The current system, which was engendered by the Renaissance, industrialization, the urbanization that developed in the 19th century, the relations of production brought by capitalism, the consumer culture, the media and many more factors, has been effective in the creation of modern individualism (Değirmen, 2015). Accordingly, self-interest, which is characterized as the strongest manifestation of individualism (Kesikoğlu, 2016), and sense of entitlement have begun to increase. Twenge and Campbell (2008, p.1082) describe the period we live in as the "Age of Entitlement". According to Cairns (2017, p.161), the age of entitlement emerged because of poor parenting methods, digital and new media technologies involving narcissism, and in popular culture, praise for individuals' behavior that creates the idea that they are privileged. In this age, individuals show a tendency to take whatever they want whenever they want even if others are affected negatively. There is a myth that generation Y, otherwise known as the millennium generation, that was born especially between the years 1980 and 2000, is more privileged than previous generations. According to this myth, young people believe that they deserve praise and a good life without having to do anything in return. This situation manifests itself when a person perceives him/herself as different, more special or more privileged than others (Ünsal-Akbıyık, 2018). Soylu (2018) also states that an individual learns entitlement within the social, cultural and economic environment that he/she lives in and reinforces this with educational experiences.

The concept of entitlement, which lies at the heart of many problems related to the distribution of resources in society, such as tax relief, social welfare distribution, registration at a good university and even watching football matches from the best seats (Campbell, Bonacchi, Shelton, Exline & Bushman, 2004, p.29), has a characteristic that is examined in various fields such as psychology, social psychology, sociology, and law. Each field attempts to define this concept from its own perspective (Jordan, Ramsay & Westerlaken, 2017). In psychology, the concept of entitlement is regarded as a subdimension of narcissism, but since measuring and examining the concept as a subdimension of narcissism does not produce completely reliable results, it is thought that examining it independently will give more accurate results (Campbell et al., 2004).

Psychological entitlement is defined by Harvey and Harris (2010) as individuals' possession of an excessively positive sense of self that does not tie in with their ability and potential. Stating that their own concept was that "psychological entitlement is intrapsychically pervasive or global", Campbell et al. (2004) conceptualized psychological entitlement as "a stable and pervasive sense that one deserves more and is entitled to more than others" (p.31).

Another concept that theoretically overlaps and has a positive relationship with the concept of psychological entitlement is the concept of academic entitlement. However, since expectations related to academic entitlement emerge only in academic environments, it is discussed as a separate field from psychological entitlement (Carollo, 2020). In the literature, there are corresponding or partially corresponding definitions of academic entitlement (Wasieleski, Whatley, Briihl & Branscome, 2014). Academic entitlement is a tendency to have an expectation of academic success without taking personal responsibility for achieving success (Chowning & Campbell, 2009); a structure involving high expectations and demanding attitudes towards teachers despite low effort (Greenberger, Lessard, Chen, & Farruggia, 2008); expectation of high grades despite inability to meet the criteria or standards for success (Singleton-Jackson, Jackson, & Reinhardt, 2011); and individuals' perception that they deserve to obtain high grades irrespective of how much they have studied, of how much time they have spent, or of their own ability (Miller, 2013). Although the concept of academic entitlement is defined in different ways, the concept carries a negative connotation, since, as can be understood from the definitions, academic entitlement involves students' demands for high/extra grades without carrying out the task given to them or without studying enough to guarantee that they will obtain high grades, accessibility of teaching staff whenever students wish, and their expectation that exceptions will be made for them (Reinhardt, 2012).

Although the expectation of academic entitlement is regarded as a characteristic of generation Y, otherwise known as the millennium generation (Harvey & Martinko, 2009; Twenge, Konrath, Foster, Campbell, & Bushman, 2008; Twenge, 2009; Twenge, 2013), research studies reveal that behaviors related to the expectation of entitlement are not limited to generation Y (Gotschall, 2015). Students can display their academic entitlement expectations by speaking on their mobile phones, reading the newspaper, using a laptop computer and texting during lessons, coming to the lesson late, leaving the lesson early, and interacting with the instructor responsible for the lesson via email or telephone, or with a casual and arrogant attitude in face-to-face conversations (Chowning & Campbell, 2009); with behaviors in which they want the academician to raise their final grade; or with the attitude that they expect certain privileges due to the tuition fee they have paid (McLellan & Jackson, 2017) or their attendance in classes (Ifill-Fraser, 2019).

Students' behaviors and attitudes that are a manifestation of their academic entitlement expectations are associated with a number of social, cultural, economic and political factors. In the 1980s, some of the multiple factors aimed at raising the spirits of elementary and secondary students with academic deficiencies instead of correcting their errors and remedying their deficiencies included boosting self-esteem (Sohr-Preston & Boswell, 2015), lowering education standards (Stout, 2000); with the commodification of education, turning students into customers who require a return for their expenditure on education (Delucchi & Korgen, 2002; Finney & Finney, 2010; Singleton-Jackson, Jackson & Reinhardt, 2010; Stiles, Pan, LaBeff & Wong, 2019); individual characteristics, grade inflation and the helicopter family (Cain, Romanelli & Smith, 2012); and excessively protective or permissive family attitudes (Greenberger et al., 2008).

In the literature, there are studies examining academic entitlement expectations of students studying in different fields at undergraduate level with scales having different numbers of items and dimensions (Anderson, Halberstadt & Aitken, 2013; Brown, 2013; Chowning & Campbell, 2009; Greenberger et al., 2008; Jackson, Frey, McLellan, Rauti, Lamborn & Singleton-Jackson, 2020; Jackson, Singleton-Jackson & Frey, 2011; Jordan, Ramsay & Westerlaken, 2017; Kopp, Zinn, Finney & Jurich, 2011; Singleton-Jackson et al., 2011; Twenge et al., 2008; Wasieleski et al., 2014). It was investigated whether the expectation of academic entitlement differs according to demographic factors (age, gender, ethnic roots, etc.), family factors (over-protective, intervening), social factors, educational factors (whether or not the student pays for education, success status), and individual characteristics (narcissist, external locus of control). In most of the studies, it was found that male students had higher academic entitlement expectations than female students (Achacoso, 2002; Boswell, 2012; Brown, 2013; Carollo, 2020; Ciani, Summers & Easter, 2008; Chowning & Campbell, 2009; Desmarais & Curtis, 1997; Foster, Keith-Campbell & Twenge, 2003; Frey, 2015; Greenberger et al., 2008; Sohr-Preston & Boswell, 2015; Wasieleski et al., 2014). Boswell (2012) explains this difference between males and females by the difference in socialization and the fact that males place more value on successful outcomes of a task.

Research results related to whether students' entitlement expectations differ according to grade level are contradictory. For example, Chowning and Campbell (2009) reached conflicting conclusions in two separate studies that they themselves made. In the first study, which they conducted by using a scale consisting of 10 items in two dimensions, namely externalized responsibility and entitled expectations, they revealed that there was no difference between first and fourth grade students. However, in the second study, significant differences were found between first grade students and fourth grade students in the externalized responsibility dimension. The researchers stated that the fact that first grades were in their first semester in the first study and in the second semester in the second study may have influenced this situation. Ciani et al. (2008) found that students' academic entitlement beliefs increased during the period spent at university, albeit to a small extent, and that students in higher grades had more entitlement beliefs than students in lower grades.

Despite the absence of studies examining the relationship between students' academic entitlement expectations and their financial situations, students and their families who pay a tuition fee believe that they deserve certain privileges (Kopp et al., 2011). Furthermore, Ifill-Fraser (2019) found

that university students who were financially independent had significantly higher academic entitlement beliefs than financially dependent students and those who were partly financed (whose education expenses were partly met by themselves and partly by others).

Although studies aimed at the expectation of academic entitlement mostly regard it as a phenomenon specific to education systems in North American countries (Blincoe & Garris, 2017), studies made in different countries, for example in the People's Republic of China (Clark, Juan, Allerton, Otterness-Jun & Wei, 2012), Oman (Natarajan, Muliira & van der Colff, 2017), Germany and Japan reveal that discourteous and disturbing behaviors are increasing among students at undergraduate level (McLellan & Jackson, 2017). However, it is seen that there is a need for new studies to be conducted in different countries about academic entitlement, in order to clarify the local, cultural and universal dimensions of the issue.

Academic Entitlement in the Turkish Higher Education System

As is experienced in many countries, in Turkey, too, a process of commercialization, privatization and capitalization began in the 1980s in line with neoliberal economic policies in higher education. Together with commercialization trends, holding universities began to be established (Güven, 2002), and permission was given for the opening of foundation and private universities. Although it is stated in the Higher Education Law (1981) that foundation universities are to be established without the aim of seeking a profit, the foundation universities became one of the indicators of the trend for marketization (Küçükkırımlı, 2019) and most of them operate with the aim of making a profit (Kurt, 2015). Although public universities in Turkey are financed mostly by the state, the students meet their expenses, such as housing, transport, and all kinds of books, materials and equipment related to the courses themselves. Furthermore, in some programs in public universities, a tuition fee is also taken from the students. The most important source of finance in foundation universities, however, is contributions obtained from the students (Küçükkırımlı, 2019; Söyler & Karataş, 2011).

Moreover, one of the prominent phenomena in the education system in Turkey is the fact that students are obliged to compete with each other (Keskin, 2012). Among OECD countries, Turkey is the country in fifth place for low level of student cooperation and high level of competition (Karip, 2020). To receive education in a good quality university, 2 million young people enter an important competition-based exam every year. Being successful in the exam is an important problem both for students and their families. The fact that despite the high number of students entering the exam, the student quotas to be placed in four-year higher education programs are small leads to serious worries not only for students, but also for their immediate circles. This situation is also explained by the wave of "parentocracy", that is, an educational ideology "whereby the education a child receives must conform to the wealth and wishes of parents rather than the abilities and efforts of pupils" (Brown, 1990, cited by Keskin, 2012, p.63). In Turkey, since access to higher education and later, opportunities to find work are more difficult than in earlier periods, it is observed that in children's education, families have come to the fore and are even themselves in a kind of race with each other (Keskin, 2012, p.64).

In the Turkish education system, apart from Kurtyılmaz's (2019) scale adaptation study, no studies can be found revealing students' academic entitlement expectations. However, the fact that studies have not been conducted on the issue does not mean that students do not have entitlement expectations or that they do not display rude and discourteous behaviors. As stated above, the commercialization of education from the 1980s onwards, the fact that students have become customers, the fact that they are required to pass an elimination/competition-based exam to enter good quality universities, and the increase in protective and helicopter parenting behaviors suggests that there may be an increase in students' academic entitlement expectations or in discourteous behaviors.

In recent years, certain events occurring at different levels of education and reflected in the press suggest that they may also be associated with academic entitlement expectations and that there is

a need for studies related to the subject to be carried out. For example, a student at a private university shot and killed a research assistant because the assistant did not allow him to copy during an exam, and then, during the inquiry, stated as a reason that the lessons were difficult and so he had to copy, as well as that the research assistant had rebuffed him (Haber Türk, 2019), reflects the gravity of the situation. Besides these events that occurred, academicians' accounts and experiences also reveal that students' academic entitlement expectations have become a serious problem at universities (Kurtyılmaz, 2019).

The above explanations and the events occurring in education environments show that there is a need for studies related to academic entitlement in Turkey. It is considered that this study, which has been conducted on academic entitlement expectations, is important in several aspects. First, Lerner (1987) stated that all individuals generally have entitlement beliefs that are defined by the cultural structures they belong to, while Kopp et al. (2011) stated that since academic entitlement beliefs can differ in certain contexts, there is a need for context-specific measurements. In line with these explanations, rather than adapting one of the existing scales related to academic entitlement expectations into Turkish, the aim in this study is to develop a scale specific to the cultural context of Turkey. In this way, it is hoped that evaluation of students' academic entitlement expectations within this context will be more reliable, and that therefore, this will lead the way in filling the gap in the research about academic entitlement in Turkey, as well as contributing to international studies with its context-specific (Turkey specific) results, as Kopp et al. (2011) stated.

Secondly, although it is considered that students studying in every field of education might expect academic entitlement, the research was carried out only with students studying in the field of primary school teaching. Researchers think that teachers have roles and responsibilities in terms of fostering moral and ethical values in future generations, such as respect, equality, justice, honesty, impartiality, diligence, sharing, solidarity and responsibility. It is expected that primarily primary school teachers at the first stage of education are expected to act within the framework of these values and to be role models for their students while performing their profession. Based on these expectations, it is considered important to determine preservice primary school teachers' levels of academic entitlement expectations before they begin their professional lives. It is hoped that this study, which has been made on preservice primary school teachers' levels of academic entitlement expectation, will also serve as a guide for conducting new research studies related to the factors that lead to this expectation.

Based on these explanations, the aim of this study is to examine the levels of preservice primary school teachers' academic entitlement expectations in terms of various variables. In line with this main aim, answers were sought to the following questions:

1. Do preservice primary school teachers' levels of academic entitlement expectations differ statistically significantly according to gender?

2. Do preservice primary school teachers' levels of academic entitlement expectations differ statistically significantly according to grade level?

3. Is there a statistically significant different between the levels of academic entitlement expectations of preservice primary school teachers studying at foundation universities and public universities?

METHOD

Research Model

Since there are no studies related to academic entitlement in Turkey apart from one scale adaptation (Kurtyılmaz, 2019), the aim of this study is to describe academic entitlement expectations of a wider student group according to certain variables. Students' academic entitlement expectation

was determined as the dependent variable, while gender, grade level and type of university attended (public or foundation) were determined as the independent variables. It was decided that the descriptive survey was the most suitable model to achieve the aim of the study and find answers to the research questions. The descriptive survey is a research model aiming to reveal a situation that existed in the past or that still exists, in the way it exists now (Karasar, 2017). The aim of the survey model is to describe the characteristics, scope, trends, frequencies and distribution of a situation, phenomenon, or population clearly and systematically. In the survey model, as in experimental studies, there is no question of control or manipulation of variables. This study has also been carried out according to the survey model, since preservice primary school teachers' academic entitlement expectations are described as they exist without any intervention being made.

Population and Sample

The study population of the research consisted of preservice primary school teachers studying in education faculties at universities in the city of Ankara during the spring term of the 2018-2019 academic year. In Ankara, there are 5 universities with a primary education department, of which two are foundation universities. As the result of an examination made using the Undergraduate Atlas database of the Higher Education Institution, it was determined that during the period when the research was carried out, there were a total of 1256 preservice teachers studying in primary education departments in the city of Ankara. The sample of the study was determined with the convenience sampling method. According to Cohen, Manion and Morrison (2007, pp. 113-114), convenience sampling "… involves choosing the nearest individuals to serve as respondents and continuing that process until the required sample size has been obtained or those who happen to be available and accessible at the time." To calculate the sample size the below formulation (Büyüköztürk et al., 2016, p.94) was used.

$$[(\mathrm{txS})/\mathrm{d}]^2 = \mathrm{n}_0 \qquad \frac{\mathrm{n}_0}{1+\frac{\mathrm{n}_0}{\mathrm{N}}} = \mathrm{n}$$

$$[(1{,}96\mathrm{x}0{,}5)/0{,}05]^2 = 384{,}16 \qquad \frac{384{,}16}{1+\frac{384{,}16}{1256}} = 294{,}18$$

n: Sample size, N: Total number of population, t: confidence interval, S: Standart deviation, d: Margin of error

The required sample size was calculated as 294 with a 5% margin of error. Accordingly, within the scope of the research, data were collected from a total of 397 primary school teacher candidates from a foundation and a state university. Information related to the participants included in the study group is included in Table 1.

Table 1. Information Related to Participants in Study Group

Variables		*f*	%
Gender	Female	347	87.41
	Male	50	12.59
Grade Level	1st Grade	102	25.69
	2nd Grade	113	28.46
	3rd Grade	78	19.65
	4th Grade	104	26.20
University Type	Public University	207	52.14
	Foundation University	190	47.86
Total		397	100,00

As can be seen in Table 1, there were 347 female and 50 male preservice teachers in the sample group. In terms of grade level, the percentages of students were close to each other. 207 of the students in the sample attended the primary education department of a public university, and 190 studied in the same department of a foundation university. The education faculty of the public university included in the study was founded 95 years ago, is the oldest-established education faculty

that trains teachers in Turkey and does not charge a tuition fee from students. The education faculty of the foundation university began instruction in the 2000-2001 academic year, and in the 2020-2021 academic year, charged a tuition fee of 48,000 TL per student. To protect the universities' institutional identity, their real names are not given.

Limitations

This research has limitation in terms of the sample. For the scale development process of the research, data were collected from undergraduate students studying at different faculties and fields of state and foundation universities in different provinces. However, the data of the survey study, which is the main application, was limited to the preservice primary school teachers in education faculty of a state and a foundation university in Ankara.

Data Collection Tool

The "Academic Entitlement Expectation Scale", which was developed by the researchers, was used as the data collection tool in the study.

Scale development process

During the development of the Academic Entitlement Expectation Scale, first, a trial form of the scale was prepared. In the preparation of the trial form, a systematic procedure was followed by considering the necessary steps and operations for scale development. The characteristics intended to be measured by the scale were defined, their scope was determined in accordance with the theoretical framework, and the scale items were created within this scope. For creating the scale items, the studies of Achacoso (2002), Chowning and Campbell (2009), Greenberger et al. (2008), Jackson, Jackson and Frey (2011), Kopp et al. (2011), Reinhardt (2012) and Wasieleski et al. (2014). Accordingly, the dimensions of academic entitlement, and the defining criteria and indicators of these dimensions were accessed, and an item pool of 57 items was prepared according to these indicators. Then, to determine the content validity of the scale, this item pool was submitted for expert opinion. Accordingly, views were obtained from two experts in the field of measurement and evaluation to determine the appropriateness of the scale development logic and behaviors intended to be measured by the scale; seven experts in the field of educational sciences as domain experts; and two experts in the field of Turkish Education to determine the clarity and understandability of the scale in terms of writing, expression, and statements. The form, which was revised in line with the expert opinions and created as a 6-point Likert type, was administered as a pilot to a student group of 10 persons, and a 58-item trial form was created by obtaining views and suggestions related to clarity and understandability of the statements. The scale items are scored as (6) strongly agree, (5) agree, (4) slightly agree, (3) slightly disagree, (2) disagree, and (1) strongly disagree. High scores obtained from the scale indicate a high level of academic entitlement expectation.

The trial form of the scale was administered both by the researchers going to the universities in person and in an electronic environment with a questionnaire form created with Google Forms. Within this scope, the trial form of the scale was answered by a total of 522 students in different grade levels from various faculties in the field of social sciences (the Education Faculty, Law Faculty, Literature Faculty, Faculty of Economics and Administrative Sciences, Communications Faculty, and Theology Faculty) at the two different types of university (public and foundation) located in different provinces.

Prior to the data analysis related to the scale development process, extreme, incorrect, and missing values were examined. Since the skewness and kurtosis values of the data set were within the ±1 interval (Hair, Black, Babin, Anderson & Tatham, 2013), and the mode, median and mean values were close to each other, it was decided that the data were normally distributed. As a result of the data extraction, forms belonging to 71 students were removed from the data set. In the process of assigning the few missing data, the EM algorithm was used. Exploratory factor analysis (EFA) was performed

on the remaining 451 forms. Before beginning the analyses, reverse items were recoded. In the data analysis process, the SPSS for Windows version 20.0 and Lisrel version 8.80 software programs were used.

Before performing the EFA in the study, the Kaiser-Meyer-Olkin (KMO) coefficient was calculated, and Bartlett's sphericity test was performed to test the suitability of the data set for factor analysis. As a result of the analyses that were made, a KMO value of .885 and a Bartlett test $\chi 2$ value of 8150.927 ($p<.001$) were found. A KMO value greater than .50 according to Kaiser (1974) and greater than .60 according to Pallant (2005), and a significant Bartlett's test, indicate that data are suitable for factor analysis. Accordingly, it was seen that the data were suitable for factor analysis. In eliminating items that could not measure the same structure and determining the number of important factors in the EFA process, indicators such as factor eigenvalues greater than 1, the line graph, the percentage of total explained variance, and the ability to represent the theoretical structure intended to be measured (Büyüköztürk, 2018) were considered.

According to the factor analysis that was carried out, items that did not conform to the specified criteria were removed, and a structure was revealed that consisted of a total of 21 items grouped under 4 factors and having eigenvalues greater than 1 related to academic entitlement expectations of university students. When naming the factors, the items that belonged to them were considered. The factors included in the scale and descriptions of the factors are explained in Table 2.

Table 2. Factors Included in Academic Entitlement Expectation Scale

Factor	Description	Example Items
General Entitlement Expectation	Indicates that a university student has a high level of academic entitlement expectation *for all university students in general* and exhibits demanding attitudes towards faculty members.	It is not right for students who are charged tuition fees in universities to fail courses. Using other people to succeed is a good thing.
Individual Entitlement Expectation	Indicates that a university student has a high level of academic entitlement expectation *only for him/herself* and exhibits demanding attitudes towards faculty members.	If my lack of attendance in a course has approached the limit, I need to be warned by the lecturer of the course. If my graduation is jeopardized because of a single course, I will demand that the lecturer of the relevant course passes me.
Externalized Responsibility	Indicates that a university student ascribes the outcomes of his/her behaviours to individuals other than him/herself (faculty members, friends, etc.) and avoids taking responsibility.	If I miss a class, it is my responsibility to follow up the things done in class (assignments, lesson notes, documents, etc.) (Reverse-scored item). It is my responsibility to keep track of all details related to homework given by the lecturer (submission data, number of pages, content, etc.) (Reverse-scored item).
Academic Narcissism	Indicates that a university student considers him/herself to be very important, exaggerates his/her achievement and abilities, and expects to be known as a superior individual irrespective of displaying sufficient success.	If anyone is to be given a grade of AA/A1 in a course, then that person is me. I like being the most popular student in the class.

Regarding the exploratory factor analysis that was performed, the item factor loadings, item-total test correlations, percentages of variance explained by the subfactors, and total variance related to academic entitlement expectation explained by the scale are given in Table 3.

Table 3. EFA Results of Academic Entitlement Expectation Scale

Dimension	Item No.	F1	F2	F3	F4	Item-Test Correlation
General Entitlement Expectation	I-32	.797				.707
	I-33	.725				.555
	I-39	.678				.562
	I-54	.639				.555
	I-20	.637				.513
	I-28	.572				.526
	I-41	.457				.462
	I-37	.429				.406
Individual Entitlement Expectation	I-27		.733			.492
	I-30		.695			.562
	I-40		.665			.510
	I-25		.656			.574
	I-21		.492			.242
	I-24		.470			.417
Externalized Responsibility	I-4			.778		.463
	I-1			.715		.500
	I-10			.657		.475
	I-11			.619		.472
Academic Narcissism	I-47				.833	.564
	I-48				.770	.533
	I-57				.661	.401
	Eigenvalue	5.199	2.270	1.701	1.266	-
	Explained Variance	24.758	10.810	8.099	6.031	-
	Total Explained Variance		49.699			-

In factor analysis, it is recommended that the item factor loadings should be at least .30 (Seçer, 2015). Table 3 shows that factor loadings related to the scale range between .429 and .833, and that each item meets the specified criterion. Moreover, it is seen that the developed 21-item scale is grouped into 4 factors with eigenvalues greater than 1 and all the factors explain 49.699% of the total variance. In multi-factor designs, an explained variance ranging between 40% and 60% is considered adequate (Çokluk, Şekercioğlu & Büyüköztürk, 2018).

Item-total correlation coefficients are classified as very good items if $r \geq .40$, good items if $.30 \leq r \leq .39$, items that can be tested after they are corrected if $20 \leq r \leq .29$, and items that should not be tested if $r \leq .19$ (Büyüköztürk, 2018). Item-total correlation has positive values greater than .40 in all items except for item 21. With a value of 0.242, item 21 belongs to the category of items that can be tested after they are corrected. Within this scope, this item was examined by the researchers, but it was decided not to make any change. When evaluated as a whole, it can be said that correlation between the items and item total is at a very good level ($r \geq .40$), and that the items serve the measurement purpose.

With the aim of revealing the relationships between the 4 factors that emerged as a result of the EFA performed on the Academic Entitlement Expectation Scale, inter-factor correlations were examined, and these values are given in Table 4.

Table 4. Inter-Factor Correlation Coefficients

Dimensions	General Entitlement Expectation	Individual Entitlement Expectation	Externalized Responsibility	Academic Narcissism
General Entitlement Expectation	-	-	-	-
Individual Entitlement Expectation	.414*	-	-	-
Externalized Responsibility	.389*	.144*	-	-
Academic Narcissism	.264*	.265*	.146*	-

Note. * p<,01; n=451

As can be seen in Table 4, a significant positive relationship was found between the factors of the scale.

During the development process of the Academic Entitlement Expectation Scale, to examine the construct validity of the 4-dimension, 21-item scale that emerged as a result of the exploratory factor analysis, confirmatory factor analysis (CFA) was performed. To conduct the CFA, data were collected from 397 preservice teachers studying at primary education departments of a public university and a foundation university in Ankara. The sample group used for CFA is different from the sample group (451 preservice teachers) used for EFA. The data obtained from the sample group for CFA were also used in the survey study.

The path diagram of the structure obtained with standardized scores related to the model is included in Figure 1.

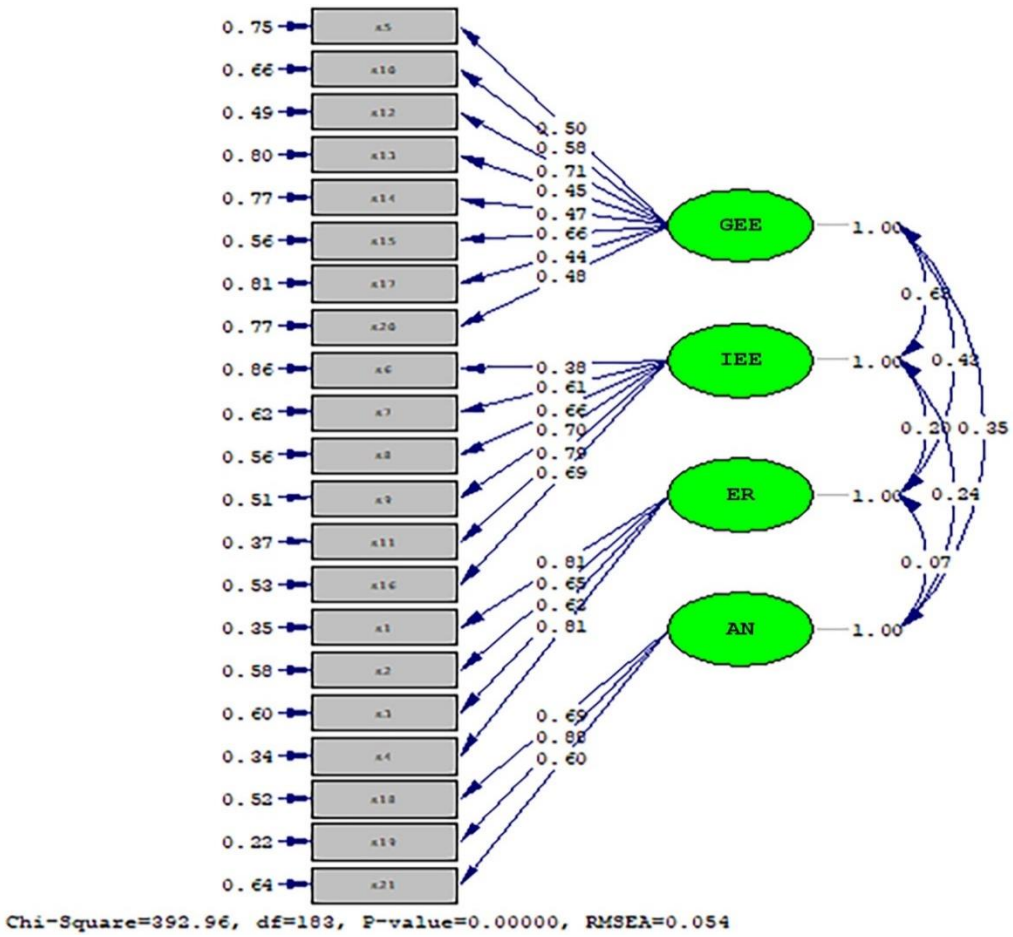

Figure 1. Path diagram for academic entitlement expectation scale

For model fit, χ2/df (Chi-Square/Degree of Freedom), RMSEA (Root Mean Square Error of Approximation), NFI (Normed Fit Index), NNFI (Non-Normed Fit Index), CFI (Comparative Fit Index), SRMR (Standardized Root Mean Square Residual), GFI (Goodness-of-Fit Index), AGFI (Adjusted Goodness-of-Fit Index) and IFI (Incremental Fit Index) values were examined. Accordingly, following the CFA conducted for the scale structure consisting of 21 items and four factors, the results obtained without performing any modification procedure on the model are presented in Table 5.

Table 5. Model Fit Indices and Criterion Values

Goodness-of-Fit Indices	Values Obtained	Acceptable Criterion
p	0.000	<0.05
χ^2/df	2.159	≤5
RMSEA	0.054	≤0.08
NFI	0.93	≥0.90
NNFI	0.95	≥0.90
CFI	0.96	≥0.95
SRMR	0.06	≤0.08
GFI	0.91	≥0.85
AGFI	0.89	≥0.80
IFI	0.96	≥0.90

As shown in Table 5, it is seen that the CFA model established to examine the structural validity of the scale provides the required goodness-of-fit indices and that the scale is structurally valid. To determine whether or not each scale item differentiates between individuals who have and do not have the characteristic desired to be measured, independent samples t-test was performed to test the significance of the difference in mean scores of the upper 27% (n=122) and lower 27% (n=122) groups. It is seen that the t-values for the difference in mean scores of the upper 27% and lower 27% groups range between -4.817 and -16.162 (p<.01). These findings show that each scale item has the desired level of discrimination.

To determine the level of reliability of the whole Academic Entitlement Expectation Scale and its subfactors, the alpha (α) coefficient developed by Cronbach was used. Values for the scale reliability are presented in Table 6.

Table 6. Reliability Analysis Results of Scale

Factor	Number of Items	Cronbach Alpha
General Entitlement Expectation	8	.815
Individual Entitlement Expectation	6	.729
Externalized Responsibility	4	.692
Academic Narcissism	3	.683
Total Scale	21	.831

According to the values in Table 6, it can be said that the internal consistency coefficient calculated for the whole scale and its subfactors is sufficient.

Data Collection

The actual data of the scale, whose validity and reliability had been tested using the trial form, were collected from 1, 2. 3. 4th grade preservice teachers studying in the primary education department of one foundation and one public university and included in the sample group. Prior to the data collection process, the required permission was obtained from the management of the universities. Then, classes in which the students were all together were visited by paying attention to the timetable of the courses. Before the data collection tool was handed out to the preservice teachers, explanations were made about the aim of the study, the fact that participation in the study was based on the

principle of voluntariness, and that the data obtained in the study would not be used anywhere outside the scope of the research. Furthermore, information was given as to how the data collection tool was to be completed. Following the explanations, the data collection tools were handed out, the students were given sufficient time for all of them to complete the answering process, and in this way, the data collection process was completed.

Data Analysis

A statistical software package program was used for the data analysis. Prior to the analysis, incorrect codes and outliers were examined, and data revealed to be outliers were removed. Missing data were assigned with the EM algorithm. In this study, in which the effect of demographic variables (gender, grade level and type of university) on academic entitlement expectation was investigated, preservice teachers' level of academic entitlement expectation was the dependent variable, while gender, grade level and type of university constituted the independent variables. For descriptive statistics regarding these variables, frequency (f), percentage (%), arithmetic mean ($\bar{x}$), and standard deviation (s) were calculated.

To examine whether academic entitlement expectation differed according to the variables, first, the normality of the data distribution was tested. As a result of the Kolmogorov-Smirnov test, although it was seen that the data were normally distributed in most subcategories of the independent variables, in some subcategories, the assumption of normal distribution was not met. However, as sample size increases, the case of significance of small differences between distributions can occur in the Kolmogorov-Smirnov test. For this reason, these tests should be used together with descriptive methods. In this context, in this study, since the number of people in the groups was over 30; arithmetic mean, mode and median values were close to each other; and skewness and kurtosis coefficients were within the ±1 limits, it can be said that the assumption of normality was met (Hair et al., 2013). For this reason, it was considered suitable to use parametric tests in the data analysis. In the study, independent samples t-test was used for paired comparisons (the gender and university type variables), while one-way analysis of variance (ANOVA) was used for multiple comparisons (grade level).

FINDINGS

In this section, the findings obtained with the analysis of the data and associated with the subproblems are given in order.

Regarding the first subproblem of the research, the t-test results of the preservice primary school teachers' academic entitlement expectations according to gender are included in Table 7.

Table 7. t-Test Results of Preservice Primary School Teachers' Academic Entitlement Expectation Scores According to Gender

Factor	Gender	*n*	$\bar{x}$	*S*	*df*	*t*	*p*
General Entitlement Expectation	Female	347	16.60	6.41	395	-2.93	.00*
	Male	50	19.47	6.85			
Individual Entitlement Expectation	Female	347	20.94	6.83	395	-.39	.69
	Male	50	21.34	6.35			
Externalized Responsibility	Female	347	7.07	2.89	395	-2.91	.00*
	Male	50	8.45	4.52			
Academic Narcissism	Female	347	9.71	3.94	395	-1.92	.06
	Male	50	10.86	3.86			
Total Scale	Female	347	54.33	14.31	395	-2.70	.00*
	Male	50	60.13	13.42			

Note. *p<.05

As can be seen in Table 7, the scores obtained for preservice primary school teachers' academic entitlement expectations show a significant difference according to gender in the total scale (t(395)=-2.70; p<.05) as well as the in general entitlement expectation (t(395)=-2.93; p<.05) and externalized responsibility (t(395)=-2.91; p<.05) factors. In both the total scale and these two subfactors, male preservice primary school teachers' academic entitlement expectations are higher than those of female preservice primary school teachers. However, there is no significant difference according to gender in the individual entitlement expectation (t(395)=-.39; p>.05) or academic narcissism (t(395)=-1.92; p>.05) factors. When evaluated in general, it can be said that gender influences academic entitlement expectation.

Within the scope of the second subproblem of the research, the difference in preservice primary school teachers' academic entitlement expectations was examined according to their grade level. Table 8 and Table 9 show descriptive statistics for the preservice primary school teachers' academic entitlement expectation scores according to grade level, and the results of the ANOVA, with which the case of statistically significant difference in these scores was tested, respectively.

Table 8. Descriptive Statistics for Preservice Primary School Teachers' Academic Entitlement Expectation Scores According to Grade Level

Factor	Grade Level	*n*	x̄	*S*
General Entitlement Expectation	1st Grade	102	18.21	6.22
	2nd Grade	113	17.57	6.99
	3rd Grade	78	15.72	5.77
	4th Grade	104	16.03	6.62
Individual Entitlement Expectation	1st Grade	102	22.76	6.47
	2nd Grade	113	21.08	6.68
	3rd Grade	78	20.97	5.54
	4th Grade	104	19.16	7.54
Externalized Responsibility	1st Grade	102	7.33	3.33
	2nd Grade	113	7.55	3.59
	3rd Grade	78	7.09	3.36
	4th Grade	104	6.96	2.25
Academic Narcissism	1st Grade	102	10.00	3.93
	2nd Grade	113	9.86	3.53
	3rd Grade	78	10.41	4.30
	4th Grade	104	9.30	4.07
Total Scale	1st Grade	102	58.29	13.36
	2nd Grade	113	56.06	14.29
	3rd Grade	78	54.19	12.30
	4th Grade	104	51.44	15.88

When Table 8 is examined, it is seen that the general trend is for the preservice primary school teachers' academic entitlement expectation scores to decrease as their grade level increases. Data related to whether or not this case was statistically significant are given in Table 9.

Table 9. ANOVA Test Results of Preservice Primary School Teachers' Academic Entitlement Expectation Scores According to Grade Level

Factor	Source of Variance	Sum of Squares	*df*	Mean Squares	F	*p*	*Difference (Tukey)*
General Entitlement Expectation	Between groups	411.04	3	137.01	3.27	.02*	1>3 1>4
	Within groups	16461.26	393	41.89			
	Total	16872.30	396				
Individual Entitlement Expectation	Between groups	667.68	3	222.56	5.02	.00*	1>4
	Within groups	17434.55	393	44.36			
	Total	18102.24	396				
Externalized Responsibility	Between groups	21.98	3	7.33	.73	.54	-
	Within groups	3956.26	393	10.07			
	Total	3978.23	396				
Academic Narcissism	Between groups	57.29	3	19.10	1.23	.30	-
	Within groups	6088.89	393	15.49			
	Total	6146.18	396				
Total Scale	Between groups	2599.01	3	866.34	4.34	.01*	1>4
	Within groups	78506.44	393	199.76			
	Total	81105.45	396				

Note. *p<.05

According to Table 9, the scores obtained for preservice primary school teachers' academic entitlement expectations show a significant difference according to grade level in the total scale (F=4.34; p<.05). The multiple comparison test results reveal that in the total scale, academic entitlement expectations are higher in preservice primary school teachers attending the first grade ($\bar{x}$= 58.29) than in those attending the fourth grade ($\bar{x}$= 51.44). There is also a significant difference in general entitlement expectation of the preservice primary school teachers (F=3.27; p<.05) according to grade level. This expectation is significantly higher in preservice teachers attending the first grade ($\bar{x}$= 18.21) than in those attending the third ($\bar{x}$= 15.72) and fourth ($\bar{x}$= 16.03) grades. Furthermore, the preservice teachers' individual entitlement expectation differs significantly according to grade level (F=5.02; p<.05). Individual entitlement expectation is also higher in preservice teachers attending the first grade ($\bar{x}$= 22.76) than in those attending the fourth grade ($\bar{x}$= 19.16). However, no significant difference was found according to grade level in the externalized responsibility and academic narcissism factors.

About the third subproblem of the research, the t-test results of the preservice primary school teachers' academic entitlement expectations according to the type of university they attended are included in Table 10.

Table 10. t-Test Results of Preservice Primary School Teachers' Academic Entitlement Expectation Scores According to University Type

Factor	University Type	*n*	$\bar{x}$	*S*	*df*	*t*	*p*
General Entitlement Expectation	Public	207	16.17	5.21	395	-2.55	.01*
	Foundation	190	17.83	7.63			
Individual Entitlement Expectation	Public	207	19.66	6.34	395	-4.18	.00*
	Foundation	190	22.44	6.92			
Externalized Responsibility	Public	207	7.30	2.80	395	.35	.73
	Foundation	190	7.19	3.53			
Academic Narcissism	Public	207	9.89	3.66	395	.17	.87
	Foundation	190	9.82	4.24			
Total Scale	Public	207	53.02	12.56	395	-2.99	.00*
	Foundation	190	57.28	15.74			

Note. *p<.05

As can be seen in Table 10, with regard to the preservice primary school teachers' academic entitlement expectations, the scores they obtained show a significant difference according to university

type in the total scale (t(395)=-2.99; p<.05), as well as in the general entitlement expectation (t(395)=-2.55; p<.05) and individual entitlement expectation (t(395)=-4.18; p<.05) factors. In both the total scale and these two subfactors, academic entitlement expectations are higher in preservice primary school teachers studying at the foundation university than in preservice primary school teachers attending the public university. However, there is no significant difference in the externalized responsibility (t(395)= .35; p>.05) or academic narcissism (t(395)= .17; p>.05) factors according to type of university.

DISCUSSION AND CONCLUSION

In this study, the academic entitlement expectations of students studying in a four-year primary education program were examined according to their gender, grade level and the type of university they attended. Based on the view that entitlement expectations can change in certain contexts (Kopp et al., 2011), a Likert-type scale specific to this study was developed. The scale has a valid structure with 21 items in four factors, namely General Entitlement Expectation, Individual Entitlement Expectation, Externalized Responsibility and Academic Narcissism. The fact that the scale was developed in the academic context of Turkey based on the literature and expert views and that it is multi-dimensional is beneficial from various aspects. First of all, a multi-factor scale makes it easier to see in which factors students' academic entitlement expectations are concentrated. Secondly, the dimensions of the scale will assist in seeing the similarities and differences in studies on academic entitlement made in other languages and cultures. Different from the two-dimensional scales of Achacoso (2002) and Chowning and Campbell (2009) that are most emphasized in the literature, the scale is four-dimensional. However, the Externalized Responsibility dimension corresponds with the factor in Chowning and Campbell's (2009) study, and the Academic Narcissism factor corresponds with the first factor of Wasieleski et al. (2014). In addition to these studies, the scale differs from the scale adapted into Turkish by Kurtyılmaz (2019). Different to the other scales, in this study, entitlement expectation revealed two factors as General Entitlement Expectation and Individual Entitlement Expectation. This situation may indicate that while participants had their own specific entitlement expectations, they also held the belief that others in general may also have academic entitlement, that is, that they are included in both individualism and communitarianism. In fact, Turkey has a complex cultural structure located at the junction of Western and Eastern cultures. It is possible to see both individualistic and participative attitudes and behaviors.

The results of studies related to whether academic entitlement expectations differ according to gender (Achacoso, 2002; Boswell, 2012; Brown, 2013; Carollo, 2020; Ciani et al., 2008; Chowning & Campbell, 2009; Desmarais & Curtis, 1997; Foster et al., 2003; Frey, 2015; Greenberger et al., 2008; Sohr-Preston & Boswell, 2015; Wasieleski et al., 2014) are such as to support each other. That is, males have higher academic entitlement expectations than females. About gender, the results of this study also show parallelism with previous studies. Male preservice primary school teachers had greater academic entitlement expectations than female preservice teachers. This result is not surprising for Turkey's male dominated context in general. That is, the fact that male students had higher academic entitlement expectations than female students may reflect the fact that with the traditional/patriarchal family/social structure in Turkey, boys are brought up to be more outgoing and are regarded as privileged, whereas girls are raised to be obedient, silent and dependent. Moreover, there are studies revealing that male preservice teachers prefer the teaching profession for more self-seeking reasons than female preservice teachers (Çermik, Doğan & Şahin, 2010). The fact that male students' academic entitlement expectations were higher can be associated with their desire to continue to protect their interests. On the other hand, there is a need for comprehensive studies that can predict the effects of families' attitudes and behaviors towards their girls and boys on students' academic entitlement expectations.

In the study of Chowning and Campbell (2009), in which they discussed the results of four consecutive studies together, the levels of students' expectations of academic entitlement according to their grade levels revealed different results. While there was no difference according to grade level in the first study, in the second study, the academic entitlement expectation levels of the first-year

students decreased and the academic entitlement expectation levels of the upper classes increased. The difference resulting from this situation was found to be statistically significant. In this study, on the other hand, the academic entitlement expectations of primary school teacher candidates studying in the first year are significantly higher than the academic entitlement expectations of primary school teacher candidates studying in the upper classes. As grade level increased, academic entitlement expectation decreased. This result of the study differs from the results of Chowning and Campbell's (2009) studies. The fact that first grade students who have just graduated from high school and are mostly late adolescents aged around 18-20 have a high level of self-confidence given by succeeding in a difficult elimination-based exam and gaining the right to receive higher education may keep their academic entitlement expectations at a high level; while over time, they may learn to comply with university rules and their lecturers and learn a more mature, realistic perspective on situations. To make clearer judgments regarding this result, investigation of the development of students' psychological maturity and sense of identity will make important contributions to the field.

The academic entitlement expectations of preservice primary school teachers studying at the public university were lower than those of preservice primary school teachers attending the foundation university. As stated previously, foundation universities were established without the aim of seeking a profit, but they obtain most of their income from students' tuition fees. The foundation university included in the sample announced on the university's website that it charged education faculty students 42,000 TL in the 2019-2020 academic year and 48,000 TL in the 2020-2021 academic year. Since students attending the primary education department of the education faculty at the foundation university pay a high fee according to the economic conditions in Turkey, they may tend to regard themselves as customers and to maintain high academic entitlement expectations for customer satisfaction. Indeed, it is stated by Delucchi and Korgen (2002), Finney and Finney (2010), Singleton-Jackson et al. (2010) and Stiles et al. (2019) that the commodification of education after 1980 put students in the position of customers and that this influenced their entitlement expectations. Soylu's (2018) doctoral study, in which the role of private schools in building an entitled personality was examined, also supports this finding. Soylu (2018) stated that private schools separate individuals culturally and spatially, give hidden messages about who and how they are in social life, and teach them to feel privileged. Further studies that investigate the role of private and public universities in the formation of academic entitlement expectation with larger populations and in different fields will offer original contributions to the field.

Implications

There is a need for further studies that will examine the reasons why academic entitlement expectations are higher in male preservice primary school teachers than in females, in first year students than in higher grades, and in students at foundation universities than in public universities, and that will reveal the reflection of expectations on behavior. Future studies supported by observations and interviews can offer detailed data that reveal the reasons for academic entitlement expectation. Future studies on students' academic entitlement expectations conducted with administrative and academic personnel can provide important data in terms of observing the dimensions of academic entitlement expectation. Further studies conducted on the way academic entitlement expectation affects ethical and social values such as cooperation, respect, sharing and solidarity can provide important feedback for the decision mechanisms related to teacher training programs and process.

Ethical approval

In this study, no action was taken against scientific research and publication ethics by acting in accordance with the Higher Education Institutions Scientific Research and Publication Ethics Directive. This study was approved by the Ethics Board at Gazi University on May 6, 2021 with approval number E-77082166-604.01.02-86260.

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International Journal of Progressive Education, Volume 18 Number 4, 2022

Higher-Order Thinking Skills and Scientific Attitudes Components as Predictors of Scientific Creativity Among Preservice Biology Teachers

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Abstract

The study assessed preservice biology teachers' higher-order thinking skills (HOTS), scientific attitudes, and creativity in the study area. The study also evaluated how the components of HOTS and scientific attitudes predict scientific creativity to determine which elements were strong predictors of scientific creativity. The study adopted a correlational survey research design. The population consists of all preservice Biology teachers in Southwestern Colleges of education, from which five hundred were randomly selected from five colleges of education. Three instruments, including Higher Order Thinking skills Test, Scientific Attitude questionnaire, and Scientific Creativity Test, were used to collect data for the study. The result showed that the HOTS scores of the respondents were low, with low mean scores of 2.54, 1.22, and 1.88 from a total maximum possible score of 9, 5, and 6, respectively, the cognitive (=20.00), emotional (=19.05), attitudinal components (=26.67). The mean score for fluency, flexibility, and originality were 14.00, 12.00, and 13.00. It was also seen that a correlation exists between sex and HOTS. The study finally showed that the Analysis ($t=2.597$, $p<0.05$) and evaluation ($t= 2.115$, $p<0.05$) components of HOTS predict scientific Creativity while cognitive component teachers ($t=2.373$, $p<0.05$) of Scientific attitude predicts Scientific Creativity.

Keywords: Scientific Creativity, Scientific Attitudes, Higher-Order Thinking Skills, Preservice Teachers

DOI: 10.29329/ijpe.2022.459.2

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INTRODUCTION

Education in the 21st century demands that learners contribute positively to society through innovative thinking and developing novel, solution-centric ideas. Learners must become intellectually responsible to themselves and other people in the community. Education and training are supposed to serve as a bridge between the lapses in the society and the desired level of development a society seeks to attain. Umeano and Adinwe (2012), in Eze and Onwe (2016), stated that education is vital for sustainable development and enhancing human potential and capabilities. They pointed out that Creativity and skills acquisition are essential foundations for national development. Developed countries today emerged due to scientific innovations and ideas generated by the people in their society. It is impossible to talk about innovations and ideas if the concepts and skills demanded in science and education have not been adequately internalized.

Science education is a vital part of education that aids societal development. It is believed that Science Education, as confirmed by the National Policy on Education (FRN, 2014) emphasizes the teaching and learning of science processes and principles for individual and national development. Science education is believed to develop scientists for all-around national development by providing knowledge and understanding of the complexity of the world and the human environment. However, reports in Nigeria and many other developing countries revealed that there had not been uncommon development in science education in the last few years.

One would expect science education to achieve its stated objectives as its contribution to national development and adaptation to rapid changes for globalization would be attained through innovative ideas that come from critical and creative thinking (Sugiyanto, Masykuri & Muzzazinah, 2018). It is believed that the teaching and learning of science will bring about the overall mental development of an individual. This cognitive development through science will determine how innovative and creative an individual will be; this is called scientific creativity. Arokoyu and Nna (2012) believed that knowledge and skills, which we know as the core components of science education, are essential for scientific creativity. Hence, the overall goal of concepts, activities, and science education assessment should be oriented toward achieving scholarship in creativity.

Building and developing creativity in students demands a high level of intellectual engagement. The core of creativity should be towards advancing intellectual skills through higher intellectual engagements. Though conceptualized in various ways, these intellectual engagements would demand higher-order cognition in the higher levels of Bloom's Taxonomy. Students, especially those in sciences, are expected to possess high other thinking skills to excel in their academic pursuit or succeed in the outside world. Donovan, Green and Mason (2014) stated that educationists in the 21st century agree that education should possess and engage intellectual skills other than primitive memorization. These engagements are encouraged through the deliberate development of the intellectual skills and cognition of the learners. Students' intellectual engagements would be appropriately developed through the development of higher-level cognition of the learners. This higher-level cognition will relate to higher-order thinking skills.

Higher-order thinking skills refer to using higher domains of Bloom's Taxonomy. Thinking skills are usually categorized into two levels. Lower-order thinking skills comprise the lower level of Bloom's taxonomy which are knowledge, comprehension, and application, and the higher-order thinking skills, which consist of Analysis, Synthesis, and Evaluation. (Montano & Crowe, 2008). It is necessary to note that there is no generalized definition of higher-order thinking skills as there could be variation in the delineation of the components of the skills. Higher-order thinking skills could broadly be described as intellectual and creative skills that allow students to provide solutions to problems without rote memorization. Pratama and Retnatwati (2018) believe that higher-order thinking skills are difficult to define but can be easily noticed, observed and recognised.

HOTS focuses on developing students' abilities to analyze effectively and evaluate by drawing inferences from existing information and synthesizing the available information. Since the essence of

education is to remold or reshape individuals' mindset and thinking capacity, this can only be achieved through the individual's deep intellectual thoughts and ability. Thus, for education to be quality, higher-order thinking is required. The lower level of cognition seeks to allow students only to remember and provide information on concepts learned, which might not necessarily allow for practicability. In the case of higher-order thinking, learners can engage in in-depth interaction with what was learnt in the classroom. It can potentially enable students to improve or achieve better learning outcomes and better understand information to enhance scientific literacy. The analysis component of the higher-order thinking skills explain how students can expand on concepts and give critical reflections by breaking down components into different parts so that their organizational structure can be understood to explain life phenomena. Synthesis relates to how they can combine various knowledge components to provide a viable explanation of concepts. At the same time, evaluation would explain how valid judgments are made from concepts learnt and the practicability of knowledge and skills to different situations. These could serve as scaffolds for creative development.

Students must use higher-order thinking skills, especially at higher levels. This is because students in higher education are expected to be faced with situations in the outside world that would demand that they think independently and spontaneously (Eryaman, 2007). As related to this study, preservice teachers are expected to use these skills to carry out practicals for secondary school students in the laboratory and encourage students to learn the use of these skills as well as set questions that will demand that students use higher-order thinking skills. It is important to note that higher Order thinking skills go beyond their importance as they relate to academic performance; they are also critical in helping students carry out tasks effectively in the labour market.

Another vital factor that has been proven to support teaching and learning is the attitude towards learning (Riedler & Eryaman, 2016). This attitude is specific to science as it entails scientific attitude. Meenakshi and Vasimalairaia (2016) that Scientific attitude is essential for critical thinking and reasoning. It deals with how skills and knowledge and skills are acquired into known behaviour. According to Gokul and Malliga (2015), scientific attitudes are the most important outcomes of learning science. They viewed the dimensionality of scientific attitudes to include rationality, open-mindedness, curiosity, aversion to suspicion, the objectivity of intellectual belief, and suspended judgments. Other aspects include self-reliance, flexibility, perseverance, adaptability, proactiveness, honesty, respect, humility, and initiative. (Okunnuga. 2017). Genc (2015), distinguished attitude to be of three essential components. These, he said, included central and emotional components (feelings), cognitive components (beliefs), and attitudinal components(actions/behaviours). The emotional component refers to verbal knowledge about a concept; the cognitive component deals with observable verbal response to an attitudinal matter, and the behavioral component identifies all observable behaviours towards an attitudinal matter. Scientific attitude relates to and helps build methods and skills used by scientists, which is synonymous with scientific practices. The plethora of different scientific attitudes develops from the actions and activities of scientists. Some attitudes, such as honesty, would be expected in any human endeavor, but other attitudes, such as tolerance of uncertainty, are more characteristics of the scientists.

The scientific attitude being learners' disposition could serve as a trigger to help students think creatively. It could help them open their minds toward learning and thinking about new ways of carrying out different activities. Each of the components of scientific creativity could assist learners in different ways. It then becomes essential that factors that will help learners develop scientific creativity are given utmost attention. Hunashal (2013) explained that scientific creativity, scientific attitude, and scientific interests can improve students' academic performance in secondary schools. A positive way to make this possible is by improving these scientific skills in teachers to help improve students' academic performance when the preservice teachers become in-service teachers; teaching students in secondary education. Hunashal (2013) suggested that science educators promote the development of scientific creativity and scientific attitude among secondary school students as this will assist in accomplishing and achieving definite success in science education.

Creativity can be defined as the awareness or the development of an individual's original idea. It is an essential problem-solving strategy where there are no easy answers to problems for which popular or conventional responses do not work. Thus, it employs novel and valuable ideas to solve societal issues.

The importance of creativity in science is towards the end that learning will to improve learning outcomes alone but so that they will be able to create learners that will contribute positively to society. The education system has been criticized for focusing solely on academic performance and neglecting the core of science, promoting innovation and innovative skills, which is a concept best learnt by developing creativity. This study then seeks to provide concrete information and overview on creativity of preservice teachers and explore the predictive capacity of scientific attitudes, which affects interests and development of skills; and higher-order thinking skills on scientific creativity of learners. Investigating the predictive ability of higher-order thinking skills also becomes essential because learning outcomes, through academic achievements and classroom tests are assessed primarily based on Bloom's Taxonomy of cognitive domains. Exploring and seeking information about the higher levels of Bloom's taxonomy and its influence on creativity could help to encourage teachers to test on these higher domains to help build learners' scientific creativity

In the past several years, scientific creativity has become well-known in educational circles. Teaching science creativity has always been one of education's latest and most successful words. It is used in the present educational sector as a phrase. In principle, science creativity is a human marvel. This artificial cycle supports him throughout his life with achievement of nobility and importance. It is essential that, in a society that begins to merge the gap and perceived difference between Male and Female gender, there is a pronounced encouragement towards improving this scientific creativity based on gender as every individual must have equal access to education and contribution to the society. The extension of the universe and the principal work of man on this planet are indistinguishable from scientific creativity. Furthermore, scientific creativity skills integrate life and public access. Consequently, its findings and development should therefore be deemed essential in these present times.

Purpose of the Study

1. Determine higher order thinking skills, scientific attitudes, and scientific creativity of preservice Biology teachers;

2. Does sex relate to HOTS, SA, and SC of preservice Biology teachers; and

3. Assess how higher-order thinking skills and scientific attitude components predict scientific Creativity of preservice Biology teachers

Research questions

1. What are preservice teachers' higher-order thinking skills, scientific attitudes, and Creativity in Biology?

2. Does sex relate to HOTS, SA and SC of preservice Biology teachers

3. How do the components of higher order thinking skills and scientific attitudes predict preservice teachers' scientific Creativity?

Contribution to Knowledge

The study added to the body of knowledge by providing information related to the level of higher-order thinking, scientific attitudes and creativity of preservice Biology teachers. It also informed on how higher order thinking and scientific attitude components predicted the scientific

creativity of preservice teachers to expand the scope of knowledge on the relationships among these variables. This will help to know how to help learners and preservice teachers improve components of thinking and attitudes to improve their creativity. Improved scientific creativity will make them better citizens in their society.

METHODOLOGY

The study adopted a survey research design with the population comprising all Biology Pre-service teachers in Southwestern Nigeria. A simple random sampling technique was used to select five colleges of education. From each of the institutions, one hundred participants were randomly selected. Three research instruments were used for the study. Higher-order thinking skills tests containing items on the higher domains of Bloom Taxonomy: Analysis, Synthesis, and Evaluation. The other instrument was the Scientific attitude questionnaire, which will elicit information about scientific attitude's cognitive, affective, and psychomotor components. In contrast, scientific creativity test provided information on the scientific Creativity of the respondents based on fluency, flexibility, and originality. Data were analysed using descriptive statistics of mean, standard deviation, skewness, and kurtosis and inferential statistics using discriminate functional Analysis.

Higher-Order Skills Test (HOST)

This test contained 20 items that had questions from the three higher levels of the cognitive domain according to Bloom's Taxonomy, that is, Analysis, synthesis and evaluation. The Analysis contained nine questions while the synthesis and evaluation domains contained five and six questions respectively. Five particular areas of Biology were selected for this study based on the courses the students have taken in their first and second years. These branches are Taxonomy/Classification, Ecology; which deals with organism and their relationship with their environment, Anatomy; which deals with organs and their structure, Physiology, which deals with functions and Cell Biology. The questions were self-developed multiple-choice questions. Each correct response scored 1 mark and the wrong answer was 0. Doring and Bortz (2016) explained that the difficulty index (P) and discrimination index (D) should be considered such that items whose difficulty index was $0.25 \leq P \leq 0.75$ and the discrimination index (D) was $0.4 \leq D \leq 0.6$ should be retained. The selected items for the study were within the difficulty and discrimination indices. Kuder Richardson-21 score of 0.82 was gotten for the instrument.

Biology Scientific Attitude Questionnaire (BSSAQ)

The test contained items relating to each scientific attitude. This included curiosity, intellectual honesty, rationality, open-mindedness, willingness to suspend judgment, proactive, objectivity, aversion to superstition, perseverance, self-reliance and humility. These attitudes were divided into the cognitive, attitudinal and affective components. Each stated scientific attitude contained questions the researcher constructed to make a total of 26 items. The instrument yielded a reliability score of 0.76 using Cronbach alpha coefficient

Biology Scientific Creativity Test

This contained questions demanding that students respond to unfamiliar situations based on individual reasoning, thinking, and opinion. It contained ten items that tested students' level of creative thinking. The creativity questions were specific to Biology. Zeng, Proctor & Salvendy (2011) posited that creativity questions specific for a particular field are more suitable than general creativity. The open-ended questions were developed after careful observations on the structure and format of different Science Creativity Tests like Hu and Adey (2002) and Torrance (1969). Each question tested students' fluency, originality, and flexibility, which are the widely accepted domains of scientific creativity. The number of logically scientific responses gave the fluency score, the number of categories gave the flexibility scores, and the frequency of accepted responses gave the originality score. Scoring was done by the researcher and a Biology science expert who has knowledge about the

scale and domains of creativity. These domains were scored according to DeHaan (2011) where fluency was scored as a number of relevant points; 0-3 points, flexibility which refers to the number of different categories of responses and originality which will be the degree of novelty among the respondents (0-3 points). The highest possible score was 90 (which was 9 points per item). inter rater reliability was used to assess the reliability of the respondents' ratings by giving the responses to two assessors (the researcher and a research assistant) to score. Pearson product moment correlation (PPMC) was thereafter used to ascertain the reliability of scores. (Cohen, 1992) The results of the Analysis revealed that there was a significant correlation ($p<0.05$) between the scores of the assessors. The reliability score for Fluency ($r= 0.626$), flexibility ($r= 0.699$), Originality ($r= 0.913$). The overall reliability score for the Scientific creativity test revealed a reliability score of 0.75.

RESULTS

What are preservice teachers' higher order thinking skills, scientific attitudes and creativity in Biology?

Table 1: Descriptive Statistics of HOTS, SA and SC

Traits	N	Max. Obtainable	Min	Max.	Mean	Adjusted Mean	Std. Dev.	Skewness
Analysis	499	9	.00	7.00	2.5411	5.64	1.48750	.308
Synthesis	499	5	.00	4.00	1.2265	4.96	.95418	.564
Evaluation	499	6	.00	5.00	1.8798	6.26	1.28068	.232
HOTS	499	20	.00	12.00	5.6473		2.46009	.041
CognitiveSA	499	28	10.00	28.00	20.0200	75.79	3.09417	-.222
EmotionalSA	499	28	9.00	28.00	19.0521	72.00	3.29190	.277
AttitudinalSA	490	48	12.00	48.00	36.6673	80.98	5.52902	-1.126
SA	490	104	47.00	100.00	75.7531		8.14052	-.218
Fluency	499	30	.00	14.00	1.2645	3.81	2.22936	2.673
Flexibility	499	30	.00	12.00	.9719	2.91	1.80895	2.639
Originality	499	30	.00	13.00	.8978	2.70	1.87018	2.991
Scientific creativity	499	90	.00	39.00	3.1242		5.77807	2.740

Table 1 shows the respondents' higher-order thinking skills, scientific attitude, and scientific creativity components. It was shown that the mean score for Analysis, synthesis and evaluation of the respondents in the study were 2.54, 1.22, and 1.88 from a total maximum possible score of 9, 5, and 6, respectively. The mean score showed that the respondents' analysis, synthesis and evaluation components of higher order thinking skills in the study area were low. The respondents' total higher order thinking skills showed a mean HOTS score of 5.64 from a maximum obtainable score of 20. This shows the study's low higher order thinking skill proficiency. The HOTS was judged low as the mean scores were below mid-point. The adjusted mean also showed that evaluation component ranked highest while the synthesis ranked least in the components of Creativity of the respondents in the study area

On scientific attitudes, the result of the study showed mean scores of 20.00(from a maximum obtainable score of 28) for the cognitive components, 19.05(from a maximum obtainable score of 28) for the emotional components and 36.67 from a maximum obtainable score of 28) for the cognitive components. This shows a high level of scientific attitude components as the mean scores were close to the maximum obtainable scores. The adjusted mean revealed that the affective components of scientific attitude were the highest while the emotional component was the least component of scientific attitude.

On scientific creativity components, the result of the study showed a mean score of 14.00, 12.00 and 13.00 for fluency, flexibility and originality scores of scientific attitudes. Compared to the maximum obtainable scores, these mean scores were low, showing the level of creativity component

scores by respondents in the study area. adjusted mean also revealed that the fluency score was the highest of the three components while originality was the least but the creativity levels were generally poor.

Research Question Two: Does sex relates to HOTS, SA and SC of preservice Biology teachers?

Point Biserial correlation was used to ascertain the relationship between sex and Higher-order thinking skills, Scientific attitude of the respondents in the study area. The result is presented in table 2

Table 2: Point Biseral Correlation on Relationship between SEX, HOTS, SA and SC of Respondents in the Study Area.

Correlations

		sex	HOTS	Scientific attitude	scientific creativity
Sex	Pearson Correlation	1	-.129**	.018	-.010
	Sig. (2-tailed)		.004	.691	.828
	N	499	499	490	499
HOTS	Pearson Correlation	-.129**	1	-.029	.185**
	Sig. (2-tailed)	.004		.525	.000
	N	499	499	490	499
Scientific Attitude	Pearson Correlation	.018	-.029	1	-.003
	Sig. (2-tailed)	.691	.525		.939
	N	490	490	490	490
scientific creativity	Pearson Correlation	-.010	.185**	-.003	1
	Sig. (2-tailed)	.828	.000	.939	
	N	499	499	490	499

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

The correlation result showed a significant relationship between sex and higher-order thinking skills of the preservice teachers as this correlation was weak and negative ($r= -0.129$, $p<0.05$). The result also showed no significant relationship between sex and the scientific attitude of respondents in the study area ($r= 0.018$, $p>0.05$). It was also revealed that no significant relationship exists between sex and scientific Creativity of the respondents ($r= -0.01$, $p>0.05$). This shows that sex does not relate to the scientific attitude and creativity of the preservice Biology teachers but relates to the Higher Order Thinking Skills of Preservice Biology Teachers in the study area.

Further Analysis of the results showed that no significant relationship exists between HOTS and SA($r=-0.029$, $p>0.05$), but a significant relationship exists between HOTS and SC($r= 0.185$, $p<0.05$).

Research Question Three: How does the components of higher-order thinking skills (HOTS) and scientific attitudes (SA) predict the Scientific Creativity (SC) of preservice teachers?

Multiple regression analysis was used to determine how HOTS and SA components predicts Scientific Creativity of preservice Biology teachers. The multiple regression table shows how Analysis, Synthesis and Evaluation components of HOTS and Cognitive, Emotional and Attitudinal Components of Scientific attitude predicts scientific Creativity.

Table 3: Multiple Regression Analysis of HOTS and SA as predictors of SC

R2= 0.048 Adj. R2=0.036 F= 4.064		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	1.868	2.548		.733	.464
	Analysis	.462	.178	.118	2.597	.010
	Synthesis	.296	.274	.049	1.079	.281
	Evaluation	.441	.208	.097	2.115	.035
	Cognitive SA	.205	.087	-.109	2.373	.018
	Emotional SA	.018	.081	.010	.222	.824
	Attitudinal SA	.074	.048	.070	1.539	.124

Table 3 showed that the r squared value of 0.048 revealed that the independent variables which are the components of HOTS and SA explain a 4.8% variation in the dependent variable (Scientific Creativity). This shows that the variability of scientific Creativity is accounted for by just 4.8% of the independent variables. The F value of 4.064, $p>0.05$, also explained that the independent variables which are components of HOTS and SA do not statistically significantly predict the SC of the respondents in the study area.

The result of the study as shown in table 3 also revealed that the Analysis component of the HOTS statistically predicts the scientific creativity of the respondents as ($t=2.597$, $p<0.05$). It was shown that a unit increase in the analysis score of the respondent will yield a 0.462 increase in Creativity. It was also shown that the synthesis component of HOTS does not statistically predict SC ($t=1.079$, $p>0.05$). Evaluation components statistically predict SC ($t= 2.115$, $p<0.05$) as a unit increase in Evaluation yields a 0.441 increase in scientific Creativity of the respondents.

On the components of scientific attitude, the study showed that only Cognitive components of Scientfic attitude statistically predict scientific Creativity of preservice Biology teachers ($t=2.373$, $p<0.05$). a unit increase in Cognitive SA will yield a corresponding 0.205 increase in scientific Creativity. The emotional component ($t=0.222$, $p>0.05$) and the attitudinal components ($t=1.539$, $p>0.05$) do not statistically predict the scientific Creativity of preservice Biology teachers.

It can be concluded that the Analysis & Evaluation components of HOTS and the Cognitive components of SA statistically predict Scientific Creativity as Analysis was the most significant predictor of scientific creativity.

DISCUSSION OF FINDINGS

The study showed that the components of HOTS and SC were low and possessed a high level of Scientific Attitude. The low level of higher order thinking skills and scientific creativity shows a low level of utilization of these components. These traits are related to the cognitive abilities and potentials of the respondents. Literature reveals a high demand for innovation and creativity, which are best developed by effective acquisition of HOTS. The implication is that preservice Biology teachers would not be adequately equipped to improve same traits in learners as they dpo not possess it themselves. It would stall innovation, productivity and effective acquisition of 21st century skills that will be important for innovation and improvement. This agreed with the work of Yusuf, Sadia, Suastra and Suharsono (2018) where teachers have a low level of HOTS. This will invariably affect teaching and learning as well as implementation strategies in the classroom thereby stalling learners development of HOTS. It is important that teachers her trained using activity-based strategies that would improve their thinking skills so that they will be able to engage in thinking skills that are of the higher domains hence improving creativity. Classroom assessments should be such that they contribute effectively to learners' thinking so that they can make meaningful contributions that involve thinking. Ansori (2020) explained that the use of HOTS in assessment questions is still low and will stall the improvement of HOTS in teachers.

The result was also following the results of Mustika, et. al (2019) whose work revealed a low level of creativity. One of the reasons cited by the researcher was the inability of scores to expose students to learning experiences that will solve real-world problems. The findings of the study was in concordance with that of Malik, Suhandi and Permanasari (2018) where it was seen that students possessed more fluent skills than flexibility and originality. Sugiyanto et. al. (2018) in their study also revealed that Biology students possess a low level of scientific creativity. Yang, Hong, Lee and Lin (2019) explained that a creative learning environment, science achievement and scientific inquiry has a significant effect on students' scientific creativity. This could be due to inadequate creative teaching among respondents in the study area as Hamdallah, Ozovehe and Dyaji (2014) emphasized the importance of teaching creatively to achieve better academic achievement and creative and critical thinking skills amongst students. Sugiyanto et. al. (2018) believed that training teachers can improve creativity, and providing conducive learning environment and appropriate materials for teaching and learning. This emphasized the need to train teachers in creativity and provide a better learning environment to improve creativity.

The study also revealed that Analysis & Evaluation components of HOTS and cognitive components of SA statistically predicts Scientific Creativity as Analysis was the biggest predictor of scientific Creativity. This signifies the importance of learners' cognitive development in improving scientific Creativity. The ability to analyze events by breaking them down into parts will allow them to develop options and various possible solutions to problems. The evaluation component of HOTS that deals with making valid judgments would also help to improve creativity as learners. Learners will be able to make judgments from problems, selecting the best possible solutions to problems based on judgments made, hence improving scientific creativity. Malik, Suhandi, and Permanasari (2018) stated that Higher Order Thinking Laboratory had a significant influence on student creativity and critical thinking abilities. The cognitive aspect of the scientific attitude, also called beliefs, includes rationality, intellectual belief and aversion to suspicion predicting scientific creativity, showing the importance of cognitions in improving scientific Creativity.

CONCLUSION

Scientific Creativity can hence be improved by improving learners' analysis and evaluation components of scientific attitudes and this can be done by activity-based learning, testing learners with a focus on the higher order of thinking than the lower order of thinking. Cognitive aspect of scientific attitudes can also be improved by asking questions and training preservice teachers to be rational in thinking, improve their levels of intellectual beliefs and aversion to suspicion by focusing on the development of science oriented concepts. The result of the improvement and training in components of scientific attitude is that they will not only end up as teachers with pedagogical skills but would help to train learners that will be equipped to contribute positively to society via intellectual thinking and provision of innovative ideas. Science teachers, like Biology teachers, need to be creative to diversify teaching aids based on the latest technology. Pedagogical practice should include higher-order thinking development.

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International Journal of Progressive Education, Volume 18 Number 4, 2022

The Relationship Between Secondary School Teachers' Creativity and Job Satisfaction*

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Abstract

This research aims to determine secondary school teachers' creativity and job satisfaction. For this purpose, a simple random sampling method was used in the study conducted with teachers working in secondary schools in Bağlar, Kayapınar, Sur, and Yenişehir districts of Diyarbakır province. The research used short forms of the "Minessota Job Satisfaction Scale" and the "Teacher Creativity Scale" as data collection tools. Teachers' perceptions about the sub-dimensions of job satisfaction and teacher creativity scales were described with arithmetic mean and standard deviation. Whether the job satisfaction levels of the teachers can be estimated from the creativity levels was tested by multiple regression analysis. According to the research findings, teachers have found themselves highly creative. In addition, the teachers expressed that they were satisfied with their work. Furthermore, it has been observed that teachers' job satisfaction levels can be estimated statistically from their expertise, creative thinking skills, and motivation perceptions. The relative importance of the predictive dimensions on job satisfaction is as follows; "motivation," "expertise," and "creative thinking skills."

Keywords: Teacher, Teacher Creativity, Job Satisfaction.

DOI: 10.29329/ijpe.2022.459.3

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* This study was partly presented at the 6th International Eurasian Educational Research Congress in Ankara. 19 – 22 June, 2019.

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INTRODUCTION

As in all organisations, changes and development affect educational organisations as well. As an educational organisation, the school needs creative teachers who can think, take risks, and produce and solve problems to adapt to the changes and developments in the school. Teachers who have the opportunity to exhibit their creativity can apply their thoughts, have the opportunity to work differently and independently, and have the opportunity to perform original applications can show a positive attitude towards their work and thus get satisfaction from their work. In this context, it can be assumed that there may be a relationship between teacher creativity and job satisfaction. When the related literature is examined, it is seen that the studies examining the relationship between teacher creativity and job satisfaction are limited. Therefore, this study examining the relationship between these two concepts is considered to contribute to the literature.

Teacher Creativity

Creativity can be defined as the process of retrieval of information and reorganisation until a new form, or new thought is formed (Bentley, 1999); the ability to produce new and valuable ideas (Luecke, 2011); the process of detecting problems or lack of information, creating hypotheses, testing, modifying these hypotheses and transmitting the results (Torrance, 1977). As it is understood from the definitions, it is emphasised that creativity should include originality and effectiveness (Runco & Jaeger, 2012).

When creativity is considered in the individual dimension, three components of creativity are mentioned. These include expertise, work motivation, and creative thinking skills (Amabile, 1998; Luecke, 2011). Expertise refers to an individual's knowledge and experience in his or her field. Creative thinking is the capacity to combine an individual's existing ideas into new combinations. On the other hand, job motivation is expressed as a state of willingness that stimulates expertise and creative thinking skills (Amabile, 1998) and uncovers the potential of creativity (Robins & Judge, 2012).

To survive, grow and develop in the globalising world, produce better goods and services, and implement a more effective marketing strategy, depends on the inclusion of creative individuals (Yanık, 2007). In the information society, what is essential is not numerical superiority but qualified human resources. The quality of education measures the quality of human resources. In this case, it has become inevitable to establish a structure in educational organisations that questions information, teaches learning and research, and can bring new information to life (Eriç, 1998). Teachers have an essential role in the formation of such a structure. Teachers play an important role in the formation of such a structure. In the classroom, the role of teachers in teaching is not only to present information but also to present knowledge, which includes several behaviours such as choosing activities, involving students in activities, arranging problem situations, acting as a catalyst, and enabling students to produce divergent solutions (Bevevino et al., 1999). It is to respond to the learning efforts of students to establish the infrastructure that will enable them to acquire knowledge and present it (Pepe, Addimando, & Veronese, 2017). Because the primary role of a teacher is to help learning happen, they play specific roles. One of the most famous roles of teachers is as a facilitator. This role is significant because students are preoccupied with problems when learning takes place. Therefore, teachers need to create a conducive learning environment for their students. Suwartono (2016) argues that creativity is the point to be considered in this regard.

Creative teachers participate in the exploration, push the boundaries, and involve their students in the process (Aschenbrener et al., 2007) and create their teaching style and classroom management with intuition and intuition observation (Sungur, 2001). Furthermore, teacher creativity is considered as creating a creative and innovative learning process in the classroom to enrich the objectives to be achieved (Terry et al., 2018), encouraging reasonable risks and unforeseen situations while reinforcing creative activities (Morais & Avezedo, 2011).

Man's creative power and self-realisation, passions, intuitions, and experiences are essential. Knowledge and skills that do not respond to a need, curiosity, or fantasy can not be acquired. Therefore, future generations are the responsibility of multi-faceted teachers. In this context, what the student feels, what he is doing, and thinks are essential for teaching. The responsibility of preparing the environment for the transition of the individual from being an object in the class to being the subject belongs to the teachers (Riedler & Eryaman, 2016; Sungur, 2001). In this context, teachers need to use their creativity for the multi-faceted development of children (Çelebi Öncü, 2012). Because nowadays, students live in an ever-changing, technology-oriented world. Therefore, teachers can constantly struggle with the attention and time of the students. The charms of computer games contradict the minds of young minds, and in this context, educators struggle to attract the attention of students. However, the learning process also changes in parallel with the developments. Therefore, teachers are expected to develop more creative approaches to keep up with the changes and developments and plan for the new generation (An, 2011).

Teachers who have the opportunity to exhibit their creativity can apply their thoughts, have the opportunity to work differently and independently, and have the opportunity to perform original applications can show a positive attitude towards their work and thus get satisfaction from their work.

Job Satisfaction

Job satisfaction, which is the subject of significant research in the social sciences, is a critical determinant of the continuation of employees' work (Perrachione et al., 2008). Job satisfaction is defined as the pleasure and the positive emotional state that a person feels by evaluating his or her work or work-life (Başaran, 2008). Job satisfaction is shaped by the job itself, wage, workplace safety, promotion opportunities, recognition and appreciation, decision-making power and influence, and a sense of productivity that does good work (Bota, 2013). Job satisfaction is essential in the contemporary management approach. It is considered a responsibility and necessity to create the conditions to provide job satisfaction in administrations where the individual is kept at the forefront and which give importance to humans (Kumas & Deniz, 2010). As an educational organisation, the human element is the most critical factor in schools. The attitude, behaviour, and satisfaction of the human resources other than students in schools can determine the quality of the service. In this context, it can be stated that teachers' job satisfaction in schools is essential.

The teacher's job satisfaction emerges as a function of the relationship between what he wants from teaching and what he perceives and refers to the emotional relationship associated with the teaching role. While the warm, sincere, and personal relationships of teachers with students; the intellectual and challenging work of teaching, and autonomy and independence of the teaching profession contribute to satisfaction, a series of factors such as the monotony of daily routines; the lack of motivation and discipline of some of the students, the lack of support and appreciation of colleagues and managers also lead to teachers' disappointment and negative perceptions of self-esteem; therefore, they can negatively affect job satisfaction (Şahin, 2013). However, the fulfilment of these responsibilities by teachers who undertake essential responsibilities in raising the human resources needed by the country may depend on their peaceful and productive work.

Teachers who are satisfied with their professions have positive feelings about what they know and teach and attach importance to their professional development ((Sonmezer & Eryaman, 2008; Ma & MacMillan, 2010). At the same time, teachers' job satisfaction is related to their motivation, happiness, and commitment to teaching. Moreover, the continuation of the work of the teachers that make up the most significant human capital of a school (Collie et al., 2012) is also affected by job satisfaction (Perrachione, Rosser, and Petersen, 2008).

The Relationship Between Teacher Creativity and Job Satisfaction

Teaching is considered a predominant practice profession rather than a theory, which aims to provide intellectual and emotional development for individuals along with their social and physical

development (Schreglmann & Kazancı, 2016). Nevertheless, teachers play an essential role in achieving the education system's goals. Therefore, it should not be surprising to say that the foundation of a successful education system is the teacher (Taherkhani, 2015). The role of teachers in teaching is not only to provide information but also to establish the infrastructure for acquiring that information and to respond to students' learning efforts to present information (Çağlar, 2010).

In this context, teachers should be able to organise and implement individualised programmes according to their developmental characteristics and needs. From this point of view, it can be stated that teachers should have enough creativity to plan activities as much as the number of students in their classes (Yenilmez & Yolcu, 2007). With meaningful and challenging work, teachers can provide students with pleasure and satisfaction, and thus, they can transform their students into lifelong learners and conscious individuals. In addition, by creating different school activities, students can be provided with the opportunity to learn what they need to learn (Schlechty, 2005). However, when teachers try different practices, can apply their thoughts, and show their original ideas, they can also be satisfied with their work. The job satisfaction of teachers, who play a crucial role in the education process and have high job satisfaction, can contribute to the healthy functioning of the education process. because teachers' satisfaction with their jobs is essential in fulfilling the mission of education (Bogler, 2001; Sahito & Vaisanen, 2017). Teachers with high job satisfaction have high performance (Koç et al., 2009; Chamundeswari, 2013) and high commitment (Karataş & Güleş, 2010).

On the other hand, job satisfaction is considered an indicator of emotional well-being. It is stated that teachers' satisfaction with their work can effectively communicate with their students or colleagues (Chamundeswari, 2013). At the same time, the job satisfaction of teachers can affect student achievement and teacher motivation. Satisfied teachers are more likely to provide higher-quality teaching services. Therefore, teachers' job satisfaction can seriously affect school development and the teachers themselves. Because satisfied teachers are more interested in professional development, this situation affects school development (Dorozynska, 2016). In this respect, knowing the concepts related to teachers' job satisfaction is essential. This study was designed to study the relationship between teachers' creativity and job satisfaction. For this purpose, the following questions were sought:

1) What are secondary school teachers' creativity and job satisfaction levels?

2) Does secondary school teachers' creativity predict their job satisfaction?

METHOD

The universe, sample, data collection tools, and data analysis process of the research conducted in the relational survey model are given below.

Population and Sample

This study was conducted on teachers working in secondary schools in Bağlar, Kayapınar, Sur, and Yenişehir districts of Diyarbakır province. Considering the difficulty of reaching all the teachers in the universe, the sampling method was used. In this context, 357 teachers were identified by a simple random sampling method. Of the 312 returned questionnaires, 304 forms filled by the instruction were evaluated.

One hundred thirty-nine teachers who participated in the research were female, and 165 were male. Two hundred eighty of the participants are at the undergraduate level, and 24 are at the graduate level. The professional seniority of teachers varies between 5 months and 35 years.

Data Collection Tools

"Teacher Creativity Scale" and the "Minnesota Job Satisfaction Scale" were used as data collection tools in the research.

The Teacher Creativity Scale. The scale was developed by Uçar (2015), consisting of 28 items and three sub-dimensions: expertise, creative thinking skills, and motivation. In the original scale, Cronbach's alpha value is α = .87 for expertise, α = .88 for creative thinking skills and α = .92 for motivation. In this study, Cronbach alpha values have been found as; α = .87 for expertise, α = .87 for creative thinking skills and α = .90 for motivation.

Minnesota Job Satisfaction Questionnaire. *The questionnaire* developed by Weiss et al. (1967), and the short form of the Job Satisfaction *questionnaire*, adapted to Turkish by Baycan (1985), were used. The *questionnaire* consists of 20 items. Baycan (1985) found the Cronbach alpha value as .77. While Özkan (2017) found .88, and Kahveci et al. (2019) identified it as .92. In this study, the Cronbach alpha value of the *questionnaire* was found to be .93.

Data Analysis

In the data analysis process conducted in the SPSS program, the teachers' perceptions about the sub-dimensions of teacher creativity and job satisfaction were described with arithmetic mean and standard deviation. Before regression analysis, the skewness and kurtosis values, Q-Q graphs, and histogram graphs were examined to determine whether the data were normally distributed or not. As a result of the analysis, the skewness values of the variables varied between -, 58 and -, 18, while the kurtosis values varied between -, 01 and 47. When skewness and kurtosis values are between -1.5 and +1.5, the distribution is assumed to be expected (Tabachnick & Fidell, 2013). Q-Q and histogram graphs also showed that the distribution of variables meets the assumption of normality (Can, 2014; Büyüköztürk, 2010). To determine whether the study's data was suitable for regression analysis, it was examined whether there was a suspicion of auto-correlation and the normal distribution of the data. Durbin and Watson's analysis tests autocorrelation suspicion. The closer the Durbin-Watson value is to 2, the more auto-correlation suspicion disappears for the multiple linear regression model (Çokluk et al., 2017). The Durbin-Watson value was found to be 1.85 in the research. This result can be interpreted as no auto-correlation. In addition, VIF (Variance Inflation Factor) and tolerance values were examined for independent variables to determine the degree of multiple correlations for predictive variables. While VIF values were found to be between 1.29 and 2.06, tolerance values were more significant than 0.2. The fact that the VIF value is less than ten and the tolerance value is more significant than 0.2 eliminates the suspicion of multiple connections (Can, 2014; Çokluk et al., 2013). All these analyses showed that the data set was suitable for regression analysis. In this direction, multiple regression analysis tried to determine whether the teachers' job satisfaction could be estimated from their creativity levels.

FINDINGS

This section presents the findings obtained as a result of the analysis of the data collected for research with the techniques explained in the method section. In this context, firstly, the creativity and job satisfaction levels of secondary school teachers were examined, and it was tried to be determined whether teachers' job satisfaction is predicted by their creativity perception.

The averages of teachers' creativity levels are given in Table 1 within the scope of these dimensions.

Table.1 Average and Standard Deviation Scores of Teacher Creativity and Job Satisfaction

Scale / Size		n	$\overline{X}$	ss	Range of participation
Teacher Creativity	Expertise	304	4,30	,493	Extremely satisfied
	Creative Thinking Skills	304	3,83	,584	Very satisfied
	Motivation	304	3,41	,738	Very satisfied
	Total	304	3,88	,482	Very satisfied
Job Satisfaction		304	3,63	,626	Satisfied

In Table 1, the creativity levels of secondary school teachers were found to be 4.30 in the expertise sub-dimension, 3.83 in the creative thinking skill sub-dimension, 3.41 in the motivation sub-dimension, and 3.88 in the teacher creativity total score.

Table 2 shows the regression analysis results for estimating teachers' job satisfaction from teacher creativity dimensions.

Table 2. Results of Regression Analysis of Estimation of Job Satisfaction of Teachers from Teacher Creativity Dimensions

Variable	B	Std. Error	ß	T	P	Binary r	Partial r
Constant	1,080	,264		4,090	,000		
Expertise	,372	,079	,293	4,696	,000	,37	,26
Creative thinking skills	-,136	,072	-,127	-1,884	,061	,31	-,11
Motivation	,431	,045	,508	9,540	,000	,54	,48

R= ,59 R^2 = ,34
$F_{(3-303)}$ = 51,97 p= ,000

When Table 2 is examined, it is seen that teachers' job satisfaction can be estimated as statistically significant from teacher creativity perceptions (*R*=.59; *F*=51.97; *p*=.000). According to the regression analysis results, it is understood that teachers' expertise, creative thinking skills, and motivation perceptions explain 34% of the variance in job satisfaction. When the correlations between teachers' job satisfaction and teacher creativity, expertise, creative thinking skills, and motivation perceptions are examined together, it is observed that the correlations are .37 with expertise, .31 with creative thinking skills, and .54 with motivation. When the correlation between teacher creativity dimensions and teachers' job satisfaction is examined separately, it is understood that the correlation is .26 (p = .000) with expertise, -.11 (p = .061) with creative thinking skills and .48 (p = .000) with motivation. According to the standardised regression coefficient, the relative importance order of the predictive dimensions on job satisfaction is motivation, expertise, and creative thinking skills. When the results of the t-test regarding the significance of the regression coefficients were examined, it was seen that the "motivation" and "expertise" subdimension were important predictors of job satisfaction. On the other hand, the creative thinking skill sub-dimension has no significant effect on teachers' job satisfaction.

RESULTS, DISCUSSION, AND SUGGESTIONS

The study was conducted to determine the relationship between secondary school teachers' creativity levels and job satisfaction levels; While the teachers stated that "I extremely satisfied " with the "expertise" sub-dimension of teacher creativity, they expressed their idea as" very satisfied " with the "creative thinking skills" and "motivation" sub-dimensions and the teacher creativity total scale score. Creativity is essential for achieving actual results in terms of organisational continuity and plays an essential role in the effectiveness of the group or team (Valentine et al., 2011). The quality of education depends on the creative ideas of those involved in education. In this context, the fundamental element of the quality of education is the development of teachers' creativity. Teachers can develop more effective and dynamic new learning methods using creativity. Teachers' creativity is related to designing and preparing materials and managing the classroom using different methods and

strategies. Therefore, teachers have a role in enriching the goals of the school. The teacher's responsibility is not only about teaching but also about educating how to share knowledge, culture, and togetherness. This means that the teacher must have the creativity to become a professional (Terry et al., 2018). In this context, teachers' high assessment of the level of their self-creativity can be considered an actual result in the existence of original practices in schools and the continuation of the activities of schools with effective teams for the school. In the studies conducted by Uçar and Köseoğlu (2019), Uçar and Dağlı (2017), Yuvacı (2017), and Çoban (2016), teachers evaluated themselves as creative as well. In addition, in the studies related to organisational creativity conducted by Yurter (2016), Balay et al. (2014), Eroglu (2014), and Karacabey (2011), teachers also expressed themselves as creative in the individual creativity dimension of organisational creativity. On the other hand, in the studies by Kurnaz (2011) and Şahin (2010), teachers' creativity levels were found to be low.

While teachers were most involved in the expertise sub-dimension of teacher creativity, they showed negligible participation in the motivation sub-dimension of teacher creativity. In other words, teachers stated that their knowledge, reservoir, and experience were conducive to creativity, but their motivation to bring out creativity was less than in other dimensions. Expertise is related to the knowledge of individuals and what they can do in their working lives (Amabile, 1998). Knowledge about the work done is the raw material that will uncover creativity. However, if the motivation is missing, this raw material may not be used (Uçar, 2015). Motivation is essential in transforming the creative potential of individuals into creative ideas (Robbins & Judge, 2012). Motivation fully combines expertise and creative thinking skills and contributes to the uncovering of creative performance (Amabile, 1997). In this context, teachers' participation in the motivation dimension that will uncover their creativity less than the dimensions of expertise and creative thinking skills can be interpreted as not being able to demonstrate their creative potential fully.

Another result of the research is that teachers are satisfied with their work. The concept of job satisfaction, which expresses satisfaction or dissatisfaction with work, in other words, explains the positive attitude towards work-related conditions. Therefore, high job satisfaction is related to the appreciation of the person's work, colleagues, and work environment; in other words, developing a positive attitude towards work (Eğinli, 2009). In this context, it can be stated that as a result of teachers' satisfaction with their jobs, teachers developed a positive attitude towards their jobs. In the research, because teachers' job satisfaction is an essential determinant of the quality of education (Persevica, 2011) and affects teachers' performances and student achievement (Suriansyah & Aslamiah, 2018), the satisfaction of teachers with their jobs may affect the education process positively. In the studies conducted by Demirtaş (2010), Erdem, Ilgan, and Uçar (2014), Kahveci et al. (2019), Kumaş and Deniz (2010) and Ordu (2016); teachers are satisfied with their work. While Altinkurt and Yilmaz (2014), Koç et al. (2009), Özkan (2017), and Yılmaz (2012) have found that teachers' job satisfaction is moderate in their studies, Şahin (2013) has determined that teachers are partially satisfied with their work. In this context, the results obtained correspond significantly with the research findings in the literature. Different results related to job satisfaction in the literature may be due to the different cultures and climates of each teacher's school.

It has been observed that teachers' job satisfaction levels can be statistically significant from their expertise, creative thinking skills, and motivation perceptions. The relative importance of predictive dimensions on job satisfaction follows as; "motivation," "expertise," and "creative thinking skills." When the t-test results regarding the significance of the regression coefficients were examined, it was seen that the sub-dimensions of "expertise" and "motivation" were significant predictors of job satisfaction and that "creative thinking skills" had no significant effect. Professional competence has a significant impact on job satisfaction. Teachers' having sufficient knowledge and skills for the course content, being able to use current teaching methods and strategies effectively, and transferring information about the subject content by using appropriate techniques in terms of meeting the standards of the course may contribute to job satisfaction (Ma & MacMillan, 1999). In this context, the impact of expertise on job satisfaction can be understood because teachers can be satisfied with their work as they use their knowledge, skills, and technical competencies.

As a result of the research, it was found that the motivation dimension from the teacher's creativity sub-dimensions had the most effect on job satisfaction. Job motivation helps individuals transform their creative potential into creative ideas (Robbins & Judge, 2012). When individuals engage in creative endeavours, they can be explorers, innovators, and thought-producing individuals (Özturk, 2001). When individuals' creative attempts are supported, this will positively affect job satisfaction. Because when individuals entirely use their abilities and feel that their contribution affects society, their personal development needs are met (Dartey-Baah, 2010). However, supported individuals have the opportunity to uncover and develop their creative powers (Kuru, 2012). As a result, Amabile et al. (2005) found that positive emotions can result from employees' creativity. In addition, Shelley et al. (2000) found that working environments that meet the creative needs of individuals lead to higher job satisfaction. These findings are qualified enough to support the research results.

As a result of the research, it was found that teachers' job satisfaction was not significantly affected by creative thinking skills. Creative thinking is not only the way of producing new ideas by using the individual's imagination to the end but also provides different solutions to different problems. While creative thinking brings some new concepts to organisations, it can be reacted to by others because it shakes the status quo (Ilgar, 2005). Therefore, creative thinking skills do not significantly affect job satisfaction in the research because teachers may constantly search for new ideas because of their creative thoughts.

Innovation-oriented job environments can affect employee satisfaction. Work environments where creativity is facilitated may be related to satisfaction. In other words, when employees have the opportunity to exhibit their creativity, their attitudes towards work can be positive (Shalley et al., 2000). An individual's belief in the primary qualities and exciting work that create a sense of education, diversity, independence, and control satisfies most employees (Robbins & Judge, 2012) and can contribute to job satisfaction. Teachers are facilitators of knowledge, and they play a vital role in building the future of a nation and creating a society of creative individuals. A suitable environment that provides teachers with the means to achieve their goals and encourages them will allow their creativity to emerge. Teachers can also be satisfied with their work when they show their creativity. It was also found in the research that teachers' creativity had a significant effect on job satisfaction. In this context, by the results mentioned above, starting from the conclusion that teachers' creativity has a significant effect on job satisfaction, teachers can be provided environments where they can show their creativity and express their creative thoughts. Because of the limited number of studies examining the relationship between creativity and job satisfaction in the literature, quantitative/qualitative/mixed studies can be conducted on the relationship between creativity and job satisfaction.

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International Journal of Progressive Education, Volume 18 Number 4, 2022

Relationships among Traditional Gender Roles, Acceptance of External Influence and Self-Alienation: The Mediator Role of Internalized Sexism

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Abstract

This study dealt with the relationships among the frequency of messages about traditional gender roles that women receive throughout their growing up processes, their acceptance of external influence and their self-alienation. In addition, it was examined whether the relationship between traditional gender roles and acceptance of external influence, and the relationship between traditional gender roles and self-alienation, are established through internalized sexism. The participants of the study were 443 women studying at the undergraduate level at various universities of Turkey. For the study, the Traditional Gender Roles Subscale of the Socialization of Gender Norms Scale, the Internalized Sexism Scale and the Authenticity Scale's dimensions of Acceptance of External Influence and Self-Alienation were used. The results revealed the full mediating role of internalized sexism in the relationship between the frequency of traditional gender role messages and acceptance of external influence and self-alienation. The results were discussed and interpreted within the framework of the relevant literature, and suggestions were presented for future studies.

Keywords: Acceptance of External Influence, Gender Socialization, Internalized Sexism, Self-Alienation, Traditional Gender Roles

DOI: 10.29329/ijpe.2022.459.4

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INTRODUCTION

Sexism, as a term rooted in a gender-based classification of the social order and emerged with the acceptance of traditional gender roles as the norm, mostly includes words, attitudes, or actions towards women, depending on power relations (Glick & Fiske, 1996; Sakallı-Uğurlu, 2003). Gender stands out as a key concept in understanding the dynamic of sexism inasmuch as it has reflections of a patriarchal system, while at the same time it causes this system to be reproduced. Gender points to a structure that people maintain through mutual interactions or learning through tools such as family, school life, social life, and the media (Epstein, 2008). When gender is assumed as a natural and unchangeable thing that results from human biological existence (Bora, 2012), it can be said that there is an opportunity for sexism to be discussed. A socially unequal division between femininity and masculinity emerges in this area where a gender ideology has traditionally been created by placing men and women in different and opposite concept maps (Oakley, 1972).

It is a well-known fact that reflections of social inequality in daily interactions are often not overtly visible (Bearman, Korobov & Thorne, 2009; Swim, Mallett & Stangor, 2004); therefore, this situation also requires addressing the dimensions of sexism in a way that makes the implicit things visible. As an umbrella term sexism can be handled at three levels: institutional, interpersonal and internalized sexism (Bearman & Amrhein, 2014; Cudd & Jones, 2005). Institutional sexism refers to gender inequalities in the explicit rules and implicit norms that structure social institutions such as the state, religion, health, education, family and media, while interpersonal sexism emerges in social interactions (Cudd & Jones, 2005). Internalized sexism, on the other hand, refers to a type of internalized oppression that involves a person internalizing a value, belief, rule or behaviour and experiencing it as a characteristic of himself/herself; hence, it is possible to note down that she/he adopts the prejudices and discredits the society towards the stigmatized group (Herek, 2009). In that sense, internalized sexism is defined as the passive acceptance and adoption of traditional gender roles (Szymanski, Gupta, Carr & Stewart, 2009). In other words, sexism practices are directed by women towards themselves and/or other women (Bearman & Amrhein, 2014).

Internalized sexism points out that women, like men, can maintain the norms of a hierarchical system based on patriarchy through their beliefs and actions (hooks, 2018). Therefore, in this article, these beliefs and actions cover all components of self-objectification (seeing and judging one's own body from the outside), derogation (approaching women indirectly by depreciating the value of their own sex), competition between women, internalized powerlessness (seeing powerlessness as a natural part of being a woman), loss of self (sacrifice of one's own needs and desires for the needs of others), and self-depreciation/prioritization of the male (devaluation of modes of existence attributed to femininity) (Bearman & Amrhein, 2014; Bozkur, 2020). Considering these components, it is important to note down that women evaluate and classify both themselves and their own gender with the norms of the patriarchal order through the oppression they internalize, and they fight each other for a higher position in the hierarchy. It is also of high importance to know oppression is a mechanism in which dominance in the oppressive system is maintained. It acts not only through external control but also through obedience to an oppressing image formed in the minds of oppressed groups (Freire, 2005; Pheterson, 1986). Much as this situation seems to be based on consent, it might create an important obstacle for women to lead an authentic life.

On the other hand, in a recent study, Ellis and Bermudez (2021) have drawn attention to the important role of gender in the formation of identity and internalized sexism might exist in any woman. According to their article, even therapists may be under the influence of internalized oppression when evaluating themselves and their clients. However, few empirical studies have been found in the literature investigating how internalized sexism is reflected in women's personal and/or relational lives. In these studies, it was understood that internalized misogyny, as a different but related concept from internalized sexism, is associated with psychological distress (e.g., Szymanski et al., 2009). Similarly, the self-silencing variable is associated with psychological distress (e.g., Hurst & Beesley, 2013) and low relationship quality (e.g., Szymanski, Ikizler & Dunn, 2016). Self-objectification, a dimension of internalized sexism, was found to be associated with depression (e.g.,

Carr et al., 2014; Szymanski & Henning, 2007) and eating disorders (e.g., Calogero, Davis & Thompson, 2005; Muehlenkamp & Saris-Baglama, 2002).

It is also possible to note down that the studies carried out with the concept of gender ideology in the literature might contribute to the handling of internalized sexism. It is well known that gender ideology refers to the individual's internalization of cultural beliefs about gender roles (Levant et al., 2007), and accordingly the concepts of masculinity (Thompson & Pleck, 1995) and femininity ideologies (Tolman & Porche, 2000) are used. As a dimension of femininity ideology, the concept of inauthentic self-in relationship is defined (Tolman & Porsche, 2000). It is possible to assert the idea that gender ideology perceived from parents and traditional gender ideology attitudes of adolescents are positively related (Bishop, 2017; Jones, 2014). On the subject, Jasser (2008) found that female university students' attitudes towards women were positively related to their mothers' attitudes towards women, and the inauthentic self-in relationship scores of young women, who adopted an egalitarian gender role attitude towards women, were lower. In addition, in the same study, it was revealed that the attitudes towards women in young women mediated the relationship between their mothers' attitudes towards women and inauthentic self-in relationship. Similarly, Wenzel and Lucas-Thompson (2012) found in their study that traditional gender ideology perceived from mothers, friends and other important people in the environment significantly predicted traditional gender ideology of women with a positive relationship. They also underlined that traditional gender ideology was negatively related to authenticity, but it was not a significant predictor of authenticity.

Internalizing sexism reflects a process that is directly related to one's self (Gilligan, 1982), and traditional gender roles are maintained both by revealing and reproducing in women's relationships. Thus, it can be thought that internalized sexism may be a determinant in women's openness to external influence and their self-alienation. Acceptance of external influence (accepting the influence of others and living in accordance with their expectations) and self-alienation (the gap between real self and self-perception) constitute two dimensions of *inauthentic being* in the context of humanistic approach (Wood, Linley, Maltby, Baliousis & Joseph, 2008). Taking into consideration that growing up with messages containing traditional gender roles may be directly related to these two dimensions, which reflect the inability to express oneself by experiencing it in a real way, this study examined whether the aforementioned relationships are established through internalized sexism.

METHOD

This research is a descriptive and relational study conducted with a quantitative paradigm and designed in a survey model. In the study, “traditional gender roles” were identified as independent, "self-alienation" and "acceptance of external influence" as dependent and "internalized sexism" as mediator variables.

Study Group: The participants of the research were female undergraduate students studying at various universities in Turkey. With convenient sampling method, 443 women studying at various years of their education participated in the study. Descriptive information about the study group is presented in Table 1.

Table 1. Descriptive Information of the Study Group

Variables		
Grade level	f	%
Preparatory	14	3.2
1st	157	35.4
2nd	121	27.3
3rd	86	19.4
4th	60	13.5
5th grade and above	5	1.1

Age	f	%
18-19	97	21.7
20-21	223	50.3
22-23	94	20.8
24 and Over	32	5.6
Sexual Orientation	f	%
Heterosexual	407	91.9
Homosexual	24	5.4
Bisexual	8	1.8
Other	4	.9

As it is illustrated in Table 1, though most of the participants are at the 1st and 2nd year (62.7%), the participant group consists of young women who continue their education at various levels. The majority of the women (92.8%) in the study group stated that they were under the age of 24 and had a heterosexual sexual orientation (91.9%).

Data Collection Tools

Authenticity Scale: To fit well with the scope of the study, the dimensions of "Acceptance of External Influence" and "Self-Alienation" of the Authenticity Scale, which was developed by Wood et al. (2008) and adapted to Turkish by İlhan and Özdemir (2013), were used. There are four items in each dimension of the 7-point Likert-type scale. Accepting external influence includes items related to accepting the expectations of others and living in accordance with them (e.g., "I always feel I need to do what others expect me to do."). On the other hand, self-alienation dimension consists of items that reflect the person's feeling out of touch with her/his true self (e.g., "I don't know how I really feel inside."). In the study, in which the scale was adapted to Turkish, the Cronbach's alpha was calculated as .79 for Self-Alienation and .67 for Acceptance of External Influence. Within the scope of this study, the Cronbach's alpha were calculated as .84 for Self-Alienation and .85 for Acceptance of External Influence.

Internalized Sexism Scale: The scale was developed by Bozkur (2020), and consists of 35 items with five sub-dimensions. The sub-dimensions of the 5-point Likert-type scale are self-objectification, derogation, loss of self/internalized powerlessness, competition/self-separation and male prioritization. Sample items for each sub-dimension are as follows, respectively. "I wear clothes that restrict my movements to look beautiful", "There are two types of women: ones you can date and ones you can marry", "I feel guilty when I give priority to my own wishes and needs over anything else", "I am not used to intrigue like some other women", and "I prefer working with male colleagues rather than females". Since this study focused on internalizing sexism with all its sub-dimensions, the total scores obtained from the scale were used in the tested models. The Cronbach's alpha and test-retest reliability coefficients of the scale were calculated as .84 and .76 for the total of the scale, respectively. The high score gathered from the scale displays that the internalized sexism level of women is high. Within the scope of this study, the Cronbach's alpha of the scale was calculated as .83.

Socialization of Gender Norms Scale (SGNS): For the study, Socialization of Gender Norms Scale, developed by Epstein (2008) and adapted into Turkish by Arıcı (2011), was used to find out the frequency of messages that individuals receive from their parents or friends regarding gender roles in their socialization processes. The SGNS, which has two factors in its Turkish version, Traditional Gender Roles and Egalitarian Gender Roles, is in a 4-point Likert type. For our case, only the Traditional Gender Roles subscale (14 items) was used. This dimension includes items such as "Women are happiest when they are in relationship" and "Always put others' feelings before your own" which reflect messages about traditional gender roles that a person received while growing up. In the study in which the scale was adapted into Turkish, the Cronbach's alpha of this scale was revealed as .79. High scores on the subscale reflect the frequency of messages about traditional gender roles that individuals received while growing up. On the other hand, in this study, the Cronbach's alpha of the subscale was calculated as .84.

Data Collection Process and Analysis of Data

Approval for the research was obtained with the decision of Mersin University Social and Human Sciences Ethics committee. Ethics Committee, dated 04.11.2021 and numbered 127. The data of the research were collected through Google Forms. "Informed Consent" was obtained from the participants. Participants who did not declare that they participated in the study voluntarily were restricted from continuing to answer. Prior to data analysis, the assumption of normality was examined, and it was found out that the skewness and kurtosis indexes for all the measurements in the study took values between -1 and +1 (Table 2), and that was within acceptable limits (Köklü, Büyüköztürk & Çokluk-Bökeoğlu, 2007).

Throughout the data analysis, the mediating role of the internalized sexism in the relationship between traditional gender roles and the variables of acceptance of external influence and self-alienation, was tested. SPSS 25.0 was used not only to create descriptive statistics on the socio-demographic characteristics of the participants but also to calculate the Pearson Correlation Coefficient to reveal the relationship between the variables covered in the study. The approach called "ordinary least squares regression" proposed by Hayes (2013) was used to comprehend the mediating role of the model tested in the research, and bootstrap was performed to support the results of the regression analysis. Bootstrap process was done via "Simple Mediation Model 4" by using PROCESS Macro 4.0 and SPSS 25.0.

Table 2. The Results of the Descriptive Statistics and Correlations Analysis (N=443)

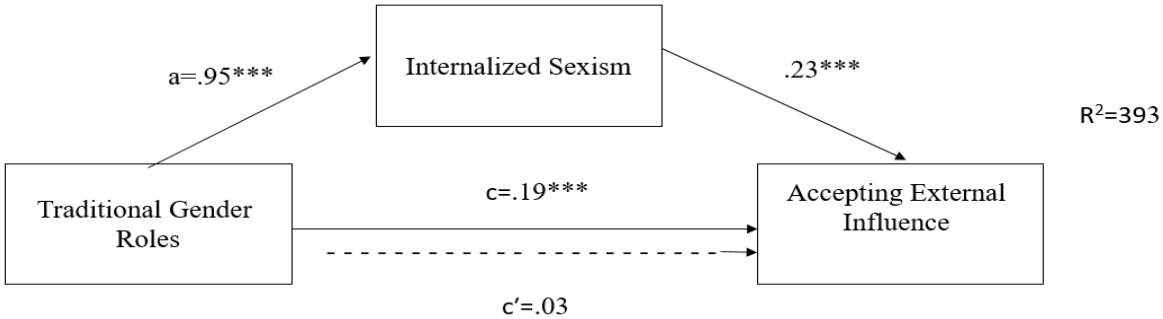
Variables	x̄	Sd.	Kurtosis	Skewness	1	2	3	4
1. Traditional Gender Roles	33.29	7.83	-.28	.06	-			
2. Internalized Sexism	78.87	16.39	.58	.41	.46**	-		
3. Self-Alienation	14.87	6.26	-.85	.26	24**	.41**	-	
4. Acceptance of External Influence	13.02	5.87	-.54	.50	.25**	.63**	.52**	-

**Correlations are significant at .01d level (2-tailed).

Table 1 shows the results of the descriptive analysis of the variables in the study and the analysis results of the Pearson Product-Moment Correlation Coefficients. As seen in Table 1, there are positive and significant relationships between all variables. Kurtosis and Skewness values show that the normality assumption is met. (It is in the range of -1 to +1.).

RESULTS

The mediation effect of internalized sexism between traditional gender roles and acceptance of external influence was tested using Process Macro Model 4 via selecting 5000 resamples with the Bootstrap technique. The findings related to the tested model are presented in Figure 1:



Note: The path coefficients are unstandardized, ***p<.001.

Fig. 1. The mediation role of Internalized Sexism in the relationship between Traditional Gender Roles and Acceptance of External Influence

In line with the data in Figure 1, it can be said that the total effect of the traditional gender roles on acceptance of external influence was statistically significant (c=.19, SE=.03, t= 5.40, p<.001); furthermore, the direct effect of traditional gender roles on internalized sexism was also statistically significant (a=.95, SE= .09, t= 10.77, p<.001). The moment the internalized sexism was added to the model as a mediator, it was found out that the relationship between traditional gender roles and acceptance of external influence was insignificant (c'=.03, SE=.03, t=-1.10, p>.05). These results indicate the full mediating role of the variable in the model, in line with the explanation of Baron and Kenny (1986). Thus, the tested model is significant (F=142.21), p< .001) and explains 39.3% of the total variance in acceptance of external influence. The comparison of the direct and indirect effects of traditional gender roles on acceptance of external influence through internalized sexism is presented in Table 3.

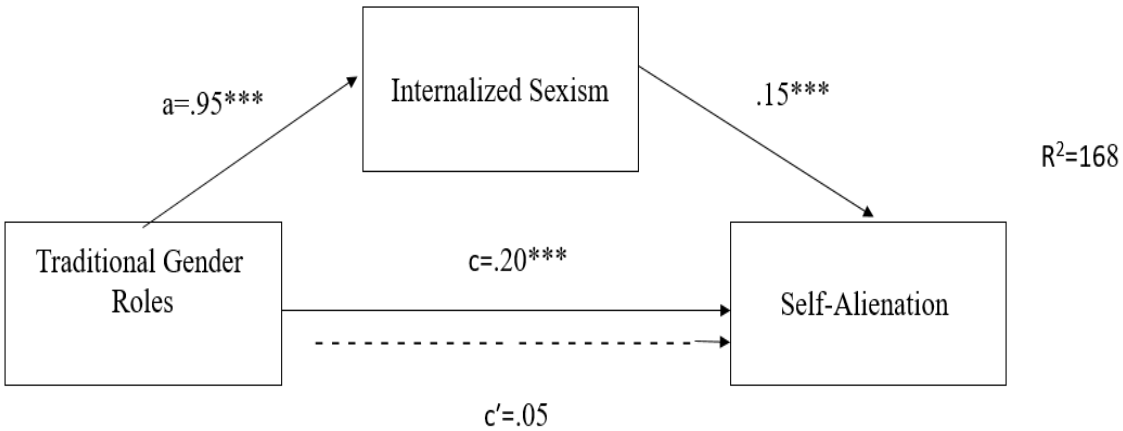
Table 3. Comparison of the Direct and Indirect Effects of Traditional Gender Roles on Acceptance of External Influence via Internalized Sexism

					Bootstrapping 95% BC Confidence Interval	
Effects	Coeff.	SE	t	p	Lower Limit	Upper Limit
Direct Effect	.2212	.02	-	-	.1779	.2681
Indirect Effect	-.0346	.03	-1.10	.27	-.0961	.0269
Total Effect	.1866	.04	5.40	.00***	.1187	.2545

N= 150, k= 5000, ***p< .001

The effects in the model were tested via 5000 bootstrap samples, and the estimates, of which results are presented in Table 3, were evaluated within the 95% confidence interval. The results of the analysis show that the indirect effect (difference between total and direct effect / c-c') of traditional gender roles through internalized sexism is statistically significant. Furthermore, the fact that the lower (.1779) and upper (.2681) limits of the confidence interval (95%) do not contain zero values indicates that this effect is statistically significant (Hayes, 2013). When the results of the mediation analysis are evaluated in general, it is possible to claim that internalized sexism has a full mediation function between traditional gender roles and acceptance of external influence.

On the other hand, to find out more about the data, the mediation effect of internalized sexism between traditional gender roles and self-alienation was tested using Process Macro Model 4, by selecting 5000 resamples with the Bootstrap technique. The findings regarding the tested model are presented in Figure 2.



Note: The path coefficients are unstandardized, ***p<.001.

Fig. 2. The mediation role of Internalized Sexism in the relationship between Traditional Gender Roles and Self-Alienation

Taking the data in Figure 2 into consideration, the total effect of the traditional gender roles on self-alienation was statistically significant (c= .20, SE= .04, t= 5.13, p< .001). In addition, the direct effect of traditional gender roles on internalized sexism was also statistically significant (a= .95, SE= .09, t= 10.77, p< .001). When the internalized sexism was added to the model as a mediator, it was observed that the relationship between traditional gender roles and self-alienation was insignificant (c'= .05, SE= .04, t= 1.34.10, p>.05). These results indicate the full mediating role of the variable in the model which is in line with the explanation of Baron and Kenny (1986). The tested model was significant (F=44.51), p<.001) and explained 16.8% of the total variance in self-alienation. The comparison of the direct and indirect effects of traditional gender roles on self-alienation through internalized sexism is illustrated in Table 4 as follows.

Table 4. The Comparison of the Direct and Indirect Effects of Traditional Gender Roles on Self-Alienation via Internalized Sexism

					Bootstrapping 95% BC Confidence Interval	
Effect	Coeff.	SE	t	p	Lower Limit	Upper Limit
Indirect effect	.1452	.02	-	-	.1052	.1898
Direct effect	.0554	.04	1.34	.18	-.0259	.1366
Total effect	.2006	.04	5.13	00***	.1237	.2775

N= 443, k= 5000, ***p< .00

The effects in the model were tested with 5000 bootstrap samples; the estimates were evaluated within 95% confidence intervals and the results are presented in Table 4. The results show that the indirect effect (difference between total and direct effect / c-c') of traditional gender roles on self-alienation through internalized sexism is statistically significant. The fact that the lower (.1052) and upper (.1898) limits of the confidence interval (95%) do not contain zero values indicates that this effect is statistically significant (Hayes, 2013). Considering the results of the mediation analysis as a whole, it can be stated that internalized sexism has a full mediation function between traditional gender roles and self-alienation.

DISCUSSION

The aim of this study was to examine the mediating effect of internalized sexism in the relationships between growth with messages containing traditional gender roles and accepting external influence and self-alienation with a sample of female university students. The findings revealed the existence of direct and indirect relationships between traditional gender roles, accepting external influence and self-alienation.

In the literature, there is a positive relationship between gender ideology (Levant et al., 2007), which indicates the individual's internalization of cultural beliefs about gender roles, and the adoption of gender ideology perceived from parents (Bishop, 2017; Jasser, 2008; Jones, 2014; Wenzel & Lucas-Thompson, 2012). This study is also in line with the results revealing the positive relationship between growing up with traditional gender roles and internalized sexism. In addition, the study (Jasser, 2008) emphasizing that young women’s attitudes towards women mediates the relationship between mothers’ attitudes towards women and inauthentic self-in relationship supports the mediating role revealed in this research.

Along with the abovementioned findings, it can be said that the frequency of traditional gender role messages and the internalization of these messages may affect women's acceptance of external influence and their self-alienation in that their selves either are subordinated by laws, traditional practices, cultural stereotypes or completely rejected (Anderson et al., 2020). In the socialization process, in accordance with their gender roles, women are taught to be contented people by suppressing their anger, saying no and making others happy and comfortable. According to Gilligan (1982), this learning process can lead women to move away from their real selves, as a

reflection of their adaptation to their relationships, in order to construct their selves and gender roles in accordance with the ideal woman image. On the other hand, there are also perspectives that find this view essentialist in that women's selves are handled in harmony with the other, and other-oriented behaviours may not always be an authentic reflection of a relational sense of self. To highlight, from a social constructivist perspective, women's other-oriented behaviour is a situational response that results from established power inequalities in social roles and situations, and this includes external acceptance for pragmatic reasons (Neff & Harter, 2002). These reactions, which reflect the process of internalization of oppression in relation to cultural norms and power relations, put forward the idea that the intensity of oppression may also be a variable in the acceptance of external influence and self-alienation. In fact, David and Derthick (2014) point out that as the intensity of oppression increases, the denial of one's own reality also increases. Hence, oppression separates one's experience of oneself and the world.

Much as the term “real self” is controversial in terms of the uncertainty in its definition (Jongman-Sereno & Leary, 2019), this division between one's self-perception and one's experience of interacting with the social environment results in self-alienation within the framework of humanistic approaches (Wood et al., 2008). The fact that internalizing sexism mediates the relationship between traditional gender roles, acceptance of external influence and self-alienation seems to explain how a form of existence, suitable for the messages received, becomes compatible with the self. It is possible to note down that internalized sexism reflects a dynamic process that creates an environment for the reproduction and maintenance of patriarchal norms in women's relations with each other (Pheterson, 1986). Since this process is a means of accepting external influence and alienation from oneself, the results obtained reveal a self-regenerating cycle towards the continuation of sexism. In other words, while women become alienated from themselves by accepting external influences during the process of internalizing sexism, they may unwittingly cause the reproduction of messages regarding traditional gender roles. In that sense, the increase in the frequency of these messages may lead to the acceptance of external influence and self-alienation through the internalization of sexism.

In the light of present research, making the abovementioned cycle visible will contribute to studies that aim to address the dynamics of women's relationships both with themselves and with each other. Based on the mediation of the process of internalizing sexism in the rift that opens between women's acceptance of a life in line with traditional gender roles, their own reality and relational experiences, researchers might consider the impact of gender roles while addressing identity formation and women's self-expression. On the other hand, one of the important limitations of this study is that it is difficult to discuss and interpret the limits of women's acceptance of external influence and self-alienation, within the framework of measuring authenticity, which is a controversial concept in the literature (Jongman-Sereno & Leary, 2019). In future studies, if qualitative evaluation of how women's internalization process of sexism is revealed in their relational experiences and interactions with each other, it may contribute to a clearer explanation of the research results. Furthermore, the research is a cross-sectional study in which data is collected simultaneously, and this can be considered as a limitation in terms of making it difficult to find out cause-effect relationships. Therefore, future studies that address these variables can also be conducted using the experimental and longitudinal method. Furthermore, there is another limitation in that the majority of the participants were young university students under the age of 24. Therefore, the possible effects of life processes, such as business life, marriage, motherhood, etc., which may affect the selves of women on the phenomenon of sexism, were not able to be examined.

CONCLUSION

Thanks to this study, the mediating effect of internalized sexism in female university students on the relations between traditional gender roles, accepting of external influence and self-alienation was revealed. These results are of high importance in that they point out the possible role of growing up with sexist attitudes on internalizing sexism; hence, this situation threatens the authenticity of women's self. In addition, the results provide contributions for mental health professionals in the

interventions related to psychological difficulties experienced by women, especially self-related issues, and in the fight against gender discrimination.

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International Journal of Progressive Education, Volume 18 Number 4, 2022

Comparative Analysis of The History of Mathematics Content in The Secondary School Mathematics Textbooks of Turkey, Singapore, Ireland and Canada

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Abstract

This study seeks to offer a comparative analysis of the History of Mathematics (HoM) elements identified in the secondary school mathematics textbooks of different countries. Drawing on document analysis method, this study analyzes the secondary school mathematics textbooks of Turkey, Singapore, Ireland and Canada. The HoM elements in the textbooks are examined in terms of famous mathematicians they present, civilization they are related to, content type, associated learning area and whereabouts they are inserted in the text. This study concludes that the textbooks of Ireland present the highest number of HoM elements quantitatively, and Ireland is followed by Turkey, Singapore and Canada, respectively. The most mentioned mathematicians in the HoM elements are Al-Khwarizmi and Pythagoras; further, the most mentioned civilization is Ancient Egypt. Further, Singapore and Canada prioritize discussion-project whereas Ireland and Turkey focus on history of concepts. Moreover, Turkey, Ireland and Canada present the highest number of HoM elements in the learning area of geometry and measurement. Singapore has the highest number of HoM elements in the area of numbers and operations. This study reveals that the countries do not sufficiently incorporate HoM into their textbooks. The countries with relatively higher number of HoM elements like Ireland use HoM for motivational purposes, rather than for teaching purposes.

Keywords: History of Mathematics Textbooks, International Comparison, Comparative Education Mathematics Education

DOI: 10.29329/ijpe.2022.459.5

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INTRODUCTION

Offering rich opportunities for learning and teaching, in addition to all materials and resources, textbooks play an invaluable resource, designed for use by both students and teachers, as well as an effective tool and a major support (Amaral et al., 2014; de Almeida &da Silva, 2019; Fan et al., 2013; Glasnović Gracin & Jukić Matić, 2016; Ishii, 2019; Jahnke, 2019; Kajander & Lovric, 2009; Kim, 2014; Lin & Tsai, 2014; Meinerz & Doering, 2019; Yang & Sianturi, 2017). Textbooks that can be used as a guide in designing and presenting courses (Gueudet & Trouche, 2009; Xenofontos & Papadopoulos, 2015) not only provides teachers and students with the interpretation of the curriculum of the course, but also offer an organized array of ideas and information to the learning process with structured instruction to guide readers to understand, think and feel and to allow them to access information (Meinerz & Doering, 2019).

It is reported that textbooks have a great impact on classroom work and form the backbone of mathematics teaching (Fan et al., 2013; Kajander & Lovric, 2009; Yang & Sianturi, 2017). Textbooks guide systematically building the bridges between curricula, teachers, students and teaching environments (Valverde et al., 2002). For guiding purposes, the elements in the textbook play a key role in incorporating the concepts and skills in the curriculum into learning environments and in helping teachers plan the practices that will shape learning environments (Fan et al., 2013). Similarly, the fact that mathematics textbooks are important materials in the construction of mathematical knowledge through enumeration, presentation and explanation of mathematical concepts and problems (O'Halloran et al., 2018) and in the prediction of student performance in mathematics implies that it has a potential of being a factor that greatly affects student achievement (Zhu & Fan, 2006).

Given their importance as teaching and learning tools in mathematics, mathematics textbooks have become a core subject of research in recent years (Lin & Tsai, 2014; Schubring &Fan, 2018; Senk et al., 2014). Indeed, ZDM published two special issues: "Textbook Research in Mathematics Education" and "Recent Advances in Mathematics Textbook Research and Development" in 2013 and 2018, respectively. England, Brazil and Germany organized the International Conference on Mathematics Textbook Research and Development (ICMT), in 2014, 2017 and 2019, respectively. One of the research themes regarding textbooks in these conferences and issues is analysis of textbooks.

Analysis of textbooks, which mostly shape what and how to teach in the learning and teaching process, potentially provides insight into the causes of differences in student achievement (Reys et al., 2004; Zhu and Fan, 2006). Accordingly, student performance in international comparative studies and examinations such as PISA and TIMSS can be explained through analysis of mathematical textbooks in different countries (Ding and Li, 2010; Li, 2000; Zhu and Fan, 2006). Analysis of textbooks can reveal different performance expectations of students in different countries, the extent to which textbooks in a country prioritizes conceptual understanding or procedural fluency and how the treatment of mathematical content differs among countries (Charalambous et al., 2010). Indeed, there is little disagreement over the great influence of textbooks on learning, including problem contexts, types of problems, and the order of presenting concepts (McNeil et al., 2006). This led the researchers to compare the mathematics textbooks of countries with higher success in international exams such as PISA and TIMSS and those with lower success. Also, textbooks are concrete tools, widely used by teachers and students, that reflect cultural and educational traditions, which spurred research to examine textbooks (Gracin, 2014). Analysis of textbooks has been performed by various researchers focusing on different aspects. For example, textbooks were compared in terms of technology integration (Mersin and Karabork, 2021), problems and sample solutions (Toprak and Ozmantar, 2019), and discussion of mathematical concepts such as fraction, probability, function, ratio-proportion (Charalambous et al., 2010; Hong and Choi, 2018). This study seeks to compare the place of history of mathematics (HoM), which affects mathematical learning in mathematics textbooks of different countries.

Why History of Mathematics?

HoM is a kind of epistemological laboratory to explore mathematics in its philosophical, scientific and social context and to understand its nature as a sociocultural product (Byers, 1982; Ju et al., 2016; Radford, 1997). Considering that mathematics progresses as a whole of the information transferred from one society to another, it is known that it is socio-culturally constructed, an endeavor greater than an individual's life and reveals the neutrality of the mathematical system through multi-cultural participation (Radford et al., 2007). Therefore, HoM can provide us with a unique experience in problematizing the moment we live in and uncovering the depth of conceptualizations shared among people living in the same period (Ju et al., 2016). These experiences enable students to acquire different perspectives on learning mathematics and to gain cognitive and affective tendencies.

One of the major benefits of teaching based on HoM is that one may have a deeper and greater understanding by experiencing the fundamentals of mathematical concepts used today, various methods and the development processes of these methods, contrary to the belief that HoM is only about memorization (Marshall and Rich, 2020). For example, as an alternative to the method stated in the curriculum in the solution of quadratic equations, the use of Khwarizmi's completing the square method as a geometric solution will provide a different perspective for students to achieve deep and permanent learning (Genc & Karatas, 2018; Mersin & Durmus, 2020).

In fact, HoM would ensure that students, who have the opportunity to examine the challenges experienced by famous mathematicians, their successes and failures, clearly see the struggles of these mathematicians to reach the point they have come to, and that students acknowledge that failing to understand something is not an indicator of failing at math and that they need to work harder to achieve their goals.

Also, the integration of HoM elements into lessons can enable students to observe that famous mathematicians also made mistakes in mathematics but did not give up discovering mathematics and focused on success; thus, students become aware that making mistakes is normal and gain confidence that they can succeed too (Philippou & Christou, 1998).

One of the strengths of mathematics is the ability to reveal the cultural diversity of different societies in their contribution to mathematics (Fried, 2007; Swetz, 2009). For example, Fibonacci's openness to the work of Arab mathematicians and his spread of ideas to Europe served as an excellent point of departure for the work of Cardano and other mathematicians (Ju et al.2016). This shows that mathematics does not belong to a single culture, instead it draws its strength from intercultural interaction.

From another perspective, HoM can help students expand their perspectives beyond their own cultural background by showing that mathematics is a cultural hybrid between various civilizations (Grugnetti et al.2002; Jahnke et al. 2002). Thus, they can learn the strengths and weaknesses of each cultural mathematical system. Besides, this shows the dimension of mathematics that emphasizes mathematics is an intellectual human activity, and highlights those mathematicians reach these results, overcoming various difficulties and with strong endeavor and determination. Further, they would realize that mathematical and scientific information should be evaluated within the conditions of the period when they were developed. Achieving all these should not be left to chance or any teacher's knowledge and effort, and textbooks need to encourage these aspects.

Rationale for the Study

Considering the importance of mathematics textbooks for both students and teachers in teaching mathematics, textbooks are utilized to benefit from HoM, which caused the need to examine the qualities of HoM content in textbooks. Indeed, it is claimed that HoM content to be integrated into mathematics textbooks must contain certain features (Wang and Yang, 2015). For example, HoM information in textbooks must be correct, objective and closely related to mathematical content; HoM

must be represented with different periods, countries, nations and cultures, and must be appropriate to the cognitive abilities of students, interesting and unique. HoM can be presented in textbooks in different ways and for different purposes considering these features. There are some studies in the literature that examine HoM elements in mathematics textbooks based on various categorizations.

Various studies have been carried out on the national and international platform, where the content of the history of mathematics in the textbooks is examined (Baki & Butuner, 2013; Ekawati et al., 2018; Erdoğan et al., 2015; Ju et al., 2015; Incikabi et al., 2019; Mersin & Durmus, 2018; Sahin et al., 2016; Schorcht, 2018; Smestad, 2003; Tan Sisman & Kirez, 2018 Xenofontos & Papadopoulos, 2015). These studies analyzed HoM elements under the categories such as where it is presented, learning area, content, purpose, the mathematical skill targeted, cognitive skills, teaching method, ways of use, grade level and frequency of use in textbooks. In general, they indicated that HoM elements in the textbooks were not sufficient and were mostly in the form of historical snippets. On the other hand, all these studies focused only on the textbooks used in teaching secondary school mathematics in Turkey. There has been no study that compares and reviews the HoM elements in the secondary school mathematics textbooks of Turkey and the textbooks of other countries. Given that mathematics has cumulatively developed through interaction between civilizations, in other words, mathematics is a cultural heritage, it is expected that this heritage is reflected in the textbooks of different nations. Besides, HoM serves as an alternative and complementary tool in mathematics teaching, encourages positive attitudes and motivation towards mathematics and eliminates racial discrimination; given all these advantages of HoM, different countries are expected to include HoM elements in their mathematics textbooks. Indeed, the textbooks of some countries such as Germany, Greece, China, Korea, Indonesia and Norway, have been examined for HoM elements, as mentioned above. In this regard, in the present study, it is aimed to compare the HoM content in middle school mathematics textbooks of Turkey and Singapore, Ireland and Canada, which are located in different continents, have different cultures and different success levels.

Research Questions

This study is designed based on two key research questions. These questions focus on the similarities and differences in how HoM elements in the secondary school mathematics textbooks of Turkey and of Singapore, Ireland and Canada are presented (content type, when it is presented in the book, and learning area). These research questions are as follows:

1.How does the way the HoM elements in the secondary school textbooks of Turkey, Singapore, Ireland and Canada are presented vary?

a. How do HoM elements vary by their references to famous mathematicians?

b. How do HoM elements vary by their association with civilizations?

c. How do HoM elements vary by content type (their presentation)?

d. How do HoM elements vary by the place where it is presented in the book (whereabouts they were inserted in the text)?

e. How do HoM elements vary by their associated learning area?

METHOD

This study, which analyzes and compares the HoM elements in the secondary school textbooks of Turkey, Singapore, Ireland and Canada, draws on document review, one of the qualitative research methods. Document analysis, closely related to thematic analysis and content analysis, involves an iterative process of carefully examining, reviewing and interpreting content, recognizing

patterns within the data, shaping emerging themes and creating categories (Bowen, 2009). This study uses textbooks as a resource for data analysis.

Selection of Turkey, Singapore, Ireland and Canada Textbooks

Singapore, Ireland and Canada countries are on different continents (Asia, Europe, America), they have different cultural structures, they show higher results in international exams such as PISA and TIMSS, and English-language mathematics textbooks are easily accessible, which are the reasons for their preference in this study.

Table 1. Textbooks Included in This Study

Country	Textbooks
Turkey	Middle School Mathematics Textbook 6, MoNE Publishing, 2019
	Middle School Mathematics Textbook 7th grade, MoNE Publishing, 2019
	Middle School Mathematics Textbook 8th grade, MoNE Publishing, 2019
Singapore	New Syllabus Primary Mathematics 6A-6B, Shing Lee, 2018
	New Syllabus Mathematics 1(7th grade), Shinglee, 2018.
	New Syllabus Mathematics 2(8th grade), Shinglee, 2018
Ireland	Exploring Project Maths Book 1(7th grade), CJ Fallon Ltd, 2013
	Exploring Project Maths Book 2(8th and 9th grade), CJ Fallon Ltd, 2013
Canada	Math Make Sense 7, Pearson, 2007
	Math Make Sense 8, Pearson, 2008
	Math Make Sense 9, Pearson, 2009

Data Analysis Framework and Process

Prior to the comprehensive analysis of the HoM elements in the secondary school mathematics textbooks of Turkey, Singapore, Ireland and Canada, the textbooks were analyzed in general to find out how much they cover HoM elements. It was found that the mathematics textbooks of Turkey, Singapore, Ireland and Canada contained HoM elements in 26 (3,4%), 30 (3,6%), 48 (6,7%) and 17 (1,2%) of their pages, respectively.

To analyze the identified HoM elements, a framework was formed by the researchers based on the studies in the literature (Ekawati et al., 2018; Incikabi et al., 2019; Mersin and Durmus, 2018; Riley, 2018; Sahin et al., 2016; Tan Sisman and Kirez, 2018; Tzanakis et al., 2002).

Accordingly, the HoM elements in the textbooks were analyzed to reveal how they were presented. To determine how they were presented, as stated in the first research question, the references to famous mathematicians in the HoM elements were examined. Considering the effect of the life stories of famous mathematicians, their determination in the process of scientific discovery and the impact of their contribution to science on student motivation, it is important to reveal how much these are presented in the textbooks.

Secondly, the HoM elements were analyzed to determine whether they emphasize any civilization or not. Throughout the history, many civilizations influenced the development of mathematics. Due to the fact that some countries do not have a single ethnicity, their textbooks present the contributions of various nations, which perhaps helps students embrace the lesson more and prevents cultural nationalism that is hypothetically caused by HoM. Thus, the HoM elements were reviewed for emphasis on any civilization.

Thirdly, regarding the first research questions, content type was examined to reveal how the HoM elements were presented. It is reported by various researchers that HoM can be included to various different contents in the textbooks (Gulikers & Blom, 2001; Jankvist, 2009; Man-Keung, 2000; Sahin et al., 2016; Tan Sisman & Kirez, 2018; Tzanakis et al., 2002; Wang & Yang, 2015).

A framework was designed to classify the HoM elements in terms of content type, considering the studies by Tan-Sisman and Kirez (2018), Şahin et al. (2016), Xenofontos and Papadopoulos (2015), Tzanakis et al. (2002). This framework for content classification consists of the following categories: basic historical biographical information, formula-rule-solution, history of concepts, historical work, tools-equipment, discussion-project and game. While classifying the HoM elements, it was seen that some elements could fall into multiple categories. The HoM elements in the textbooks were lastly analyzed to determine whereabouts they were inserted in the text.

Under the theme of how HoM elements are presented, the first category that deals with the question of when is where abouts these elements were inserted in the text. Accordingly, HoM elements were presented either in the introduction section of the subject or as a part of the subject itself, or at the end of the subject/assessment sections, or individually, outside the subject. The framework used for this was designed based on the framework utilized by Incikabı et al.(2019), Tan-Sisman and Kirez (2018), Mersin and Durmuş (2018), Şahin et al. (2016) for the classification of HoM elements according to whereabouts they were inserted.

Another category is the learning areas where HoM elements were frequently used. It was observed that HoM elements were used in similar learning areas with common names in the countries included in this study. For that reason, HoM elements were classified according to the learning areas of numbers and operations, algebra, geometry and measurement, data processing and probability, with reference to the learning areas in Turkey.

Below is a summary table on the classification used in this study.

Table 2. Analysis of the Framework for Study

Theme	Question answered	Category	Sub-category
How HoM elements are presented	How	Famous mathematicians	
		Civilizations	
		Content Type	Biographical information Formula/Rule/Solution History of concepts Historical work Tools-equipment Discussion/Project Game
	When	Whereabouts they were inserted	Introduction As a part of the subject At the End/Assessment Off-subject
		Learning area	Numbers and Operations Algebra Geometry and Measurement Data Processing Probability

Reliability and Validity

A framework for analysis was first developed for a valid and reliable identification of the HoM elements in mathematics textbooks. Then, the relevant literature was examined and categories were determined by the researchers, who reached a consensus. Following that, 12 textbooks used in Turkey, Singapore, Ireland and Canada were coded according to these categories by two different researchers separately; the researchers compared their coding and reached a consensus on the codes they first disagreed. The agreement percentage between these two coders was found to be 81.68% according to (Miles and Huberman, 1994). This implies that the coding was reliable.

FINDINGS

The findings of this study, which seeks to compare the HoM elements in the secondary school mathematics textbooks, are presented as sub-problems. To facilitate the comparison of the findings, each finding for each sub-problem was proportioned with the number of tasks and sections that contained HoM elements in each country's textbook and expressed by percentage. Table 3 shows the total number of the HoM elements for each country. The percentages given in the sub-problems were calculated based on this number. When the sub-problem included another comparison, it was proportioned within itself.

Table 3. Total Number of HOM Elements in Secondary School Math Textbooks

	TR	IR	SGP	CAN
Total elements	38	50	27	16

As seen in Table 3, Ireland (IR), with 50 elements, had the highest number of HoM elements in their secondary school mathematics textbooks whilst Canada (CAN), with 16 elements, had the lowest number of HoM elements. On the other hand, Turkey (TR) presented 38 HoM elements and Singapore (SGP) presented 27 HoM elements in their secondary school mathematics textbooks.

How does the way the HoM elements in the secondary school textbooks of Turkey, Singapore, Ireland and Canada are presented vary?

How do HoM elements vary by their references to famous mathematicians?

The findings, which include a large number of names, are summarized with multiple tables. Table 4 demonstrates the number of mathematicians and the number of the HoM elements in each country's mathematics textbooks by frequency and percentage. The percentages given in Table 5 and Table 6 were calculated based on the total number of mathematicians in Table 4.

Table 3. Total Frequency of Famous Mathematicians

	TR	IR	SGP	CAN	Mean
Total famous mathematicians	27	42	25	12	26.50
Number of elements include famous mathematicians	27	27	22	12	21.75
Mathematicians per elements	1	1.55	1.14	1	1.17
Percentage to total elements	%71.05	%54.00	%81.48	%75.00	%70.38

Table 4 indicates the percentage of the total number of elements of each country presented by famous mathematicians. With 81.48%, SGP had the highest percentage; with 54.00%, IR had the lowest percentage. The countries were compared by frequency and average percentage, which revealed that IR, whose the number of HoM elements containing famous mathematicians was above average, was proportionally below the average; CAN, whose the number of HoM elements was below average, was proportionally above the average.

The famous mathematicians were specially examined and it was found out that some of them were commonly presented in elements in multiple textbooks, some were included only in the textbooks of a single country. The famous mathematicians in Table 5 were mathematicians commonly presented in the math textbooks of multiple countries.

Table 4. Mathematicians Commonly Presented in Multiple Countries

	TR		IR		SGP		CAN	
	N	%	N	%	N	%	N	%
Descartes	1	3.70	2	4.76	1	4.00	1	8.33
El-Khwarizmi	4	14.81	3	7.14	1	4.00	1	8.33
Pythagoras	2	7.41	2	4.76	2	8.00	3	25.00
Archimedes	1	3.70	1	2.28	2	8.00	-	-
Euclid	1	3.70	4	9.52	1	4.00	-	-
Fibonacci (Leonardo of Pisa)	3	11.11	2	4.76	1	4.00	-	-
Eratosthenes	3	11.11	2	4.76	-	-	-	-
Robert Record	1	3.70	1	2.38	-	-	-	-
Thales	1	3.70	1	2.38	-	-	-	-
Diophantus	1	3.70	-	-	1	4.00	-	-
Cristian Goldbach	-	-	1	2.38	1	4.00	-	-
Total	18	66.67	19	45.24	11	44.00	5	41.67

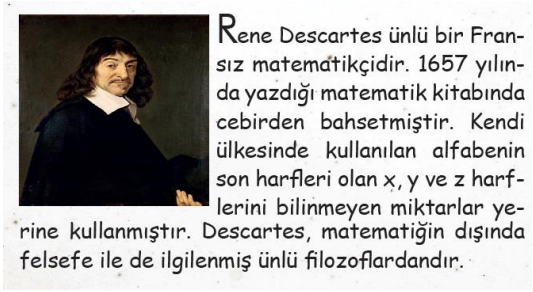
The data in Table 5 on the comparison of mathematicians commonly presented in the textbooks show that TR with 66.67% proportionally presented these common mathematicians most whereas CAN with 41.67% proportionally presented them the least frequently. The most commonly presented mathematician among these mathematicians was Al-Khwarizmi (14.81%) in TR, Euclid (9.52%) in IR, Pythagoras and Archimedes in SGP (8%) and Pythagoras in CAN (25%). 1 one of 11 commonly presented mathematicians was not included in the textbooks of both TR and IR; on the other hand, SGP and CAN did not include 3 and 8 of these mathematicians, respectively.

Table 6 shows the findings on the mathematicians other than these common mathematicians.

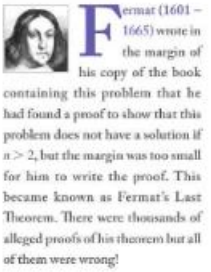
Table 5. Famous Mathematicians only Presented in the Textbooks of One Country

N	TR Mathematician	%	IR Mathematician	%	SGP Mathematician	%	CAN Mathematician	%
mentioned 3 or more times	Atatürk	11.11	Thomas Harriot	7.14	-	-	M.C. Escher (4)	33.33
mentioned 2 times	Cahit Arf, Florence Nightingale	14.81	Johann Heinrich Lambert, Edward Kasner, Brahmagupta	14.29	Blaise Pascal	8.00		-
mentioned 1 times	Albert Einstein, Ömer Hayyam	7.41	Akira Haraguchi, Bartholomea Pitiscus, George Cantor, Hipparcus, James Newman, Johannes Widmann, John Graunt, John Venn, Ludolp van Ceulen, Marin Mersenne, Ptolemy, William Jones, William Oughtred, Zu Chong	33.33	Andrew Wiles, Chevalier de Mere, Dr. Curtis cooper, Giorgio Chiarino, Girolama Cardano, Henry Dudeney, Olivera de Silva, Pierre Fermat, Leonardo da Davinci, Lonenzo Mascheoni, Newton, Sir William Petty,	44.00	Dr. Edward Doolittle, Theodorus, Sierpinski	25.00
Toplam	9	33.33	23	54.76	13	52.00	7	58.33

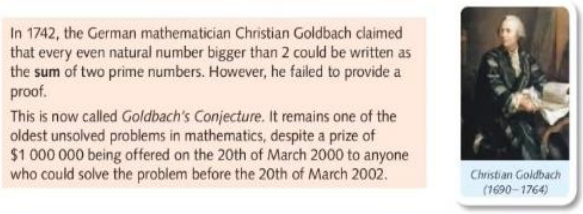
The frequency and percentage of the mathematicians only presented in the textbooks of one country were examined, and it was ascertained that CAN (58.33%) included the mathematicians other than the above-mentioned common mathematicians in their textbooks most whilst TR (33.33%) included such mathematicians the least frequently. The following mathematicians were remarkable: Atatürk in TR, Thomas Harriot in IR, Blaise Pascal in SGP and M. S. C. Esher in CAN. Figure 1 gives examples of the famous mathematicians in the textbooks.



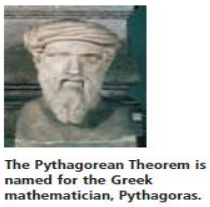
Turkey



Singapore



Ireland



Canada

Figure 1. Examples of the famous mathematicians in the textbooks

How do HoM elements vary by their association with civilizations?

The HoM elements were analyzed by notable civilizations and the relevant findings are given in Table 7. The percentages in Table 7 were proportioned with the total number of HoM elements in Table 1. The mean values are the averages of the data presented in the table.

Table 6. Total Frequency by Civilization Emphasized in the HoM Elements

	TR	IR	SGP	CAN	Mean
Total frequency of civilization	8	37	6	4	13.75
Number of elements include civilization	7	25	4	4	10
Civilization per elements	1.14	1.48	1.5	1	1.28
Percentage to total elements	%18.42	%50.00	%14.81	%25.00	%27.20

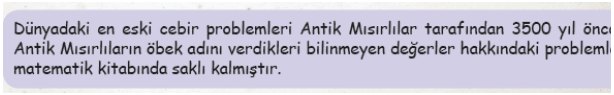
The total number of the statements that emphasized any civilization in the HoM elements was calculated; IR with 37 statements related to civilization outperformed other countries by far. It is striking that IR increased the average value; still, even if this was not the case, the country with the least emphasis on civilization was SGP (14.81%). However, it was SGP that had the highest density of elements. CAN and TR presented statements related to civilization below average percentage and frequency.

Table 8 shows which civilization was prominent in which country. The rates in this table were proportioned with the total number of the statements related to civilization.

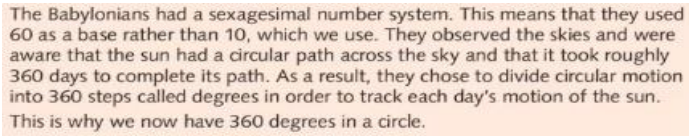
Table 7. Distribution of the Statements Related to Civilization in the HoM Elements

Civilizations	TR		IR		SGP		CAN	
	N	%	N	%	N	%	N	%
Ancient Egypt	3	42.86	10	27.03	2	33.33	1	25.00
China	1	14.29	6	16.22	1	16.67	-	-
Babylonian	-	-	7	18.92	1	16,67	1	25.00
Ancient Greece	2	28.57	5	13.51	-	-	-	-
Indian	1	14.29	3	8.11	-	-	-	-
Latin	-	-	-	-	1	16.67	1	25.00
Roma	-	-	3	8.11	-	-	-	-
European	-	-	2	5.40	1	16.67	-	-
U.S.	-	-	1	2.70	-	-	-	-
Canada's Inuit people	-	-	-	-	-	-	1	25.00
Total	8	100	37	100	6	100	4	100

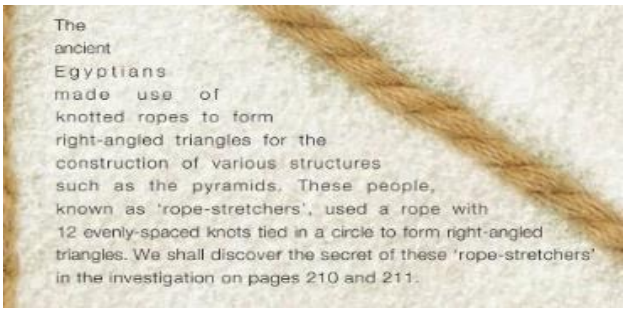
As seen in Table 8, the civilization of "Ancient Egypt" was included in the statements related to civilization of all countries whilst CAN did not present any statement related to "China." As for Turkey, the civilization of "Babylonian" was not included. The civilization of "Ancient Greece" was the civilization included by both IR and TR; also, "Latin" was commonly available in the textbooks of SGP and CAN. The civilization of "Ancient Egypt" was the civilization most commonly included in the textbooks; the least commonly used civilizations were the civilizations only included in the textbooks of one country. CAN, exceptionally, equally expressed all the civilizations included in the HoM elements. Figure 2 demonstrates the examples of the civilizations highlighted in the textbooks.


Dünyadaki en eski cebir problemleri Antik Mısırlılar tarafından 3500 yıl önc
Antik Mısırlıların öbek adını verdikleri bilinmeyen değerler hakkındaki problem
matematik kitabında saklı kalmıştır.

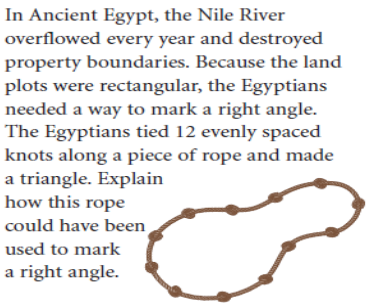
Turkey (MoNE 6, s.155)


The Babylonians had a sexagesimal number system. This means that they used 60 as a base rather than 10, which we use. They observed the skies and were aware that the sun had a circular path across the sky and that it took roughly 360 days to complete its path. As a result, they chose to divide circular motion into 360 steps called degrees in order to track each day's motion of the sun. This is why we now have 360 degrees in a circle.

Ireland (EP 1, s.229)


The ancient Egyptians made use of knotted ropes to form right-angled triangles for the construction of various structures such as the pyramids. These people, known as 'rope-stretchers', used a rope with 12 evenly-spaced knots tied in a circle to form right-angled triangles. We shall discover the secret of these 'rope-stretchers' in the investigation on pages 210 and 211.

Singapore (NS 2, s. 208)


In Ancient Egypt, the Nile River overflowed every year and destroyed property boundaries. Because the land plots were rectangular, the Egyptians needed a way to mark a right angle. The Egyptians tied 12 evenly spaced knots along a piece of rope and made a triangle. Explain how this rope could have been used to mark a right angle.

Canada (MS 8, s.45)

Figure 2. Examples of the civilizations included in the textbooks

How do HoM elements vary by content type (their presentation)?

The information that the HoM elements contained were analyzed and Table 9 presents the headings and statements used in this analysis. Each content was proportioned with the total HoM elements. As one of the elements featured more than one content characteristics, the sum of the percentages was above 100%. This is a finding that may indicate the richness of the HoM elements in terms of content. In other words, one of the criteria in the analysis was whether an element features more than one relevant characteristic or is unidirectional or multidirectional.

The richness of the HoM elements in terms of content was analyzed; SGP had the highest percentage (203.70%) and CAN had the lowest percentage (143.75%). The total content percentage on

country basis was compared with the total average (171.21%); IR and SGP were above average whilst TR and CAN were below average.

Table 9. The Comparison of the HoM Elements by Content

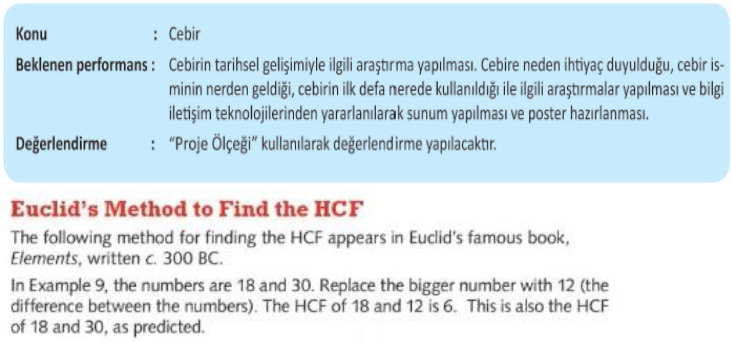
	TR		IR		SGP		CAN		Mean	
	N	%	N	%	N	%	N	%	N	%
Biographical information	17	44.74	10	20.00	7	25.93	5	31.25	9.75	30.48
Formula-rule-solution	9	23.68	24	48.00	13	48.15	5	31.25	12.75	37.77
History of concepts	19	50.00	32	64.00	13	48.15	5	31.25	17.25	48.35
Historical work	2	5.26	17	34.00	3	11.11	2	12.50	6.00	15.72
Tools-equipment	0	0.00	1	2.00	1	3.70	0	0.00	0.5	1.43
Discussion-project	9	23.68	10	20.00	18	66.67	6	37.50	10.75	36.96
Game	0	0.00	1	2.00	0	0.00	0	0.00	0.25	0.50
Total	56	147.66	95	190.00	55	203.70	23	143.75	57.25	171.21

The countries were compared based on the sub-headings. The richest content was related to the sub-heading(s) of biographical information (44.74%) in TR, formula-rule-solution (48.15%), tools-equipment (3.70%) and discussion-project (66.67%) in SGP, history of concepts (64%), historical work (34%) and game (2%) in IR, compared to other countries.

The sub-headings were compared within each country itself; the sub-heading of history of concepts was foregrounded in TR and IR whereas the sub-heading of discussion-project was foregrounded in SGP and CAN. This sub-heading was further prioritized by CAN. The distribution of the sub-headings was examined; IR offered content in all sub-headings whereas CAN had a Homogenous distribution.

The sub-headings were proportionally compared to the average of the sub-headings; the sub-heading of biographical information was above average percentage in TR and CAN and below average in other countries. The sub-headings of formula-rule-solution and tools-equipment were above average in IR and SGP and below average in TR and CAN. Besides, the sub-heading of history of concepts was below average only in CAN; the sub-headings of historical work and game were above average only in IR whereas the sub-heading of discussion-project was above average only in SGP.

Figure 3 shows examples of HoM elements by content type and learning area.


Konu : Cebir
Beklenen performans : Cebirin tarihsel gelişimiyle ilgili araştırma yapılması. Cebire neden ihtiyaç duyulduğu, cebir isminin nerden geldiği, cebirin ilk defa nerede kullanıldığı ile ilgili araştırmalar yapılması ve bilgi iletişim teknolojilerinden yararlanılarak sunum yapılması ve poster hazırlanması.
Değerlendirme : "Proje Ölçeği" kullanılarak değerlendirme yapılacaktır.

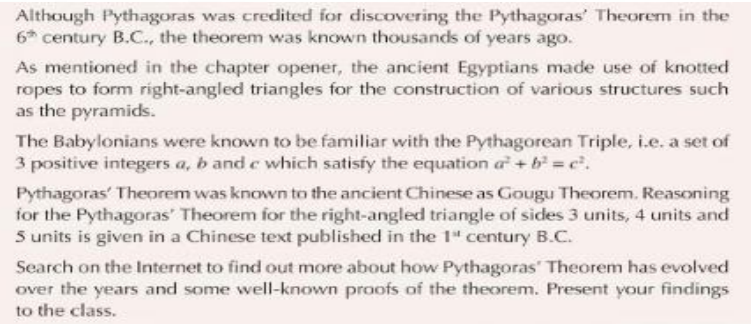
Turkey (MEB 8, s.234), discussion-project, Algebra learning area

Euclid's Method to Find the HCF

The following method for finding the HCF appears in Euclid's famous book, *Elements*, written *c.* 300 BC.

In Example 9, the numbers are 18 and 30. Replace the bigger number with 12 (the difference between the numbers). The HCF of 18 and 12 is 6. This is also the HCF of 18 and 30, as predicted.

Ireland (EP 1, s.40), formula-rule-solution, Numbers and operations learning area


Although Pythagoras was credited for discovering the Pythagoras' Theorem in the 6th century B.C., the theorem was known thousands of years ago.

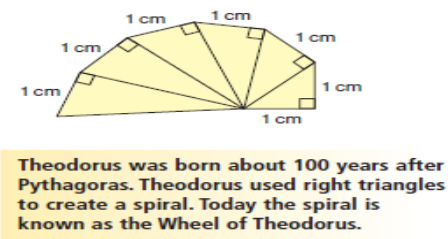
As mentioned in the chapter opener, the ancient Egyptians made use of knotted ropes to form right-angled triangles for the construction of various structures such as the pyramids.

The Babylonians were known to be familiar with the Pythagorean Triple, i.e. a set of 3 positive integers a, b and c which satisfy the equation $a^2 + b^2 = c^2$.

Pythagoras' Theorem was known to the ancient Chinese as Gougu Theorem. Reasoning for the Pythagoras' Theorem for the right-angled triangle of sides 3 units, 4 units and 5 units is given in a Chinese text published in the 1st century B.C.

Search on the Internet to find out more about how Pythagoras' Theorem has evolved over the years and some well-known proofs of the theorem. Present your findings to the class.

Singapore (NS 2, s. 212), History of concept,



Canada (MS 8, s.36), Biographic information and formula-rule-solution, Geometry and measurement learning area

Figure 3. Examples of HoM elements by content type and learning area

How do HoM elements vary by the place where it is presented in the book (whereabouts they were inserted in the text)?

Whereabouts an element presented in a textbook is inverted in that textbook affects the message given to students and the content of the element. Presenting the same element in different parts may create different messages and advantages; whereabouts a task is inserted changes the content and nature of that task. Table 10 indicates the distribution of the elements in the textbooks analyzed; based on the averages of the countries, the HoM elements were most frequently presented as a part of the subject (42.11%) and least frequently as off-subject (1.56%).

Table 10. Distribution of the Presentation of HoM Elements in the Subject

	TR		IR		SGP		CAN		Mean	
	N	%	N	%	N	%	N	%	N	%
Introduction	13	34.21	9	18.00	9	33.33	-	-	7.75	21.39
As a part of the subject	8	21.05	34	68.00	13	48.15	5	31.25	15	42.11
At the End/Assessment	17	44.74	7	14.00	5	18.52	10	62.50	9.75	34.94
Off-subject	-	-	-	-	-	-	1	6.25	0.25	1.56
Total	38	100	50	100	27	100	16	100	32.75	100

Whereabouts the HoM elements were presented in the textbooks were compared based on the averages of the countries; the HoM elements presented in the introduction were above average (21.79%) in TR (34.21%) and SGP (33.33%) whilst the HoM elements presented as a part of the subject were above average (42.11%) in IR (68%) and SGP (48.15%). Lastly, the HoM elements presented at the end/in the assessment part were above average (34.94%) in CAN (62.50%) and TR (44.74%) and below average in other countries. Similarly, the distribution of the HoM elements within each country was analyzed, and it was found that TR and CAN presented them most at the end/in the assessment part whilst IR and SGP presented them most as a part of the subject.

How do HoM elements vary by their associated learning area?

The findings on the learning areas in Table 11 indicate that the learning area of data processing and probability presented the lowest number of the HoM elements in the textbooks of all countries whereas the learning area of geometry and measurement included the highest number of the HoM elements. IR (58%) prioritized the learning area of number and operations, but CAN did not include any HoM element in this learning area. TR (26.32%) and SGP (25.93%) were proportionally close to each other, yet both were below average in the learning area of numbers and operations since IR increased the average. The only country above average in the learning area of algebra was TR.

Table 11. Distribution of HoM Elements by Learning Area

	TR		IR		SGP		CAN		Mean	
	N	%	N	%	N	%	N	%	N	%
Numbers and operations	10	26.32	29	58.00	7	25.93	-	-	11.5	27.56
Algebra	12	31.58	4	8.00	4	14.81	2.00	12.5	5.5	16.72
Geometry and measurement	14	36.84	15	30.00	13	48.15	14.00	87.5	14	50.62
Data processing and probability	2	5.26	2	4.00	3	11.11	-	-	1.75	5.09

Disregarding the learning area of data processing and probability, TR had a balanced distribution in terms of language areas; yet, SGP, IR and CAN showed a distribution from homogeneous towards heterogeneous, respectively.

DISCUSSION AND CONCLUSION

This study, which analyzes and compares the HoM elements in the secondary school mathematics textbooks of Turkey, Singapore, Ireland and Canada. The mathematics curricula of the countries were examined; Ireland explained the purpose for which HoM elements are used in math lessons as follows: "A student should be aware of history of mathematics and hence of its past, present and future role as a part of our culture" (Department of Education and Science (DES/National Council for Curriculum and Assessment (NCCA), 2014). Moreover, their teacher's book offers various content related to HoM, references to HoM resources and helpful web-sites for teachers (DES/NCCAA, 2000). Although Turkey did not articulate the use of HoM in its current math curriculum, one of the major purposes of its curriculum is that "A student should be aware of the fact that that mathematics is a common value of humanity, thus value mathematics" which clearly emphasizes HoM (Ministy of National Education (MoNE), 2018). No specific statement on HoM is available in the math curricula of Singapore (Ministry of Education (MoE,) 2012; MoE, 2020). Canada highlights HoM both in primary and secondary school mathematics curricula (MoE, 2020)). The finding that Ireland and Turkey used more HoM elements than other countries is significant as these countries mentioned HoM in their math curricula.

Furthermore, comparing with the previous studies, one can say that there has been an increase in the number of HoM elements in mathematics textbooks (Erdoğan et al., 2015; Incikabi et al., 2019; Mersin & Durmus, 2018; Tan Sisman & Kirez, 2018). Singapore, which gained its national independence in 1965, enforced many educational reforms as well, but there was no mention of HoM at primary school level, and there were historical anecdotes at the secondary school level, such as the number systems used by Ancient Egypt and Ancient China after the 1980s (Ho, 2008). For example, the New Syllabus series presented mathematical stories and snippets. Emphasizing that it is not clear enough how to use of HoM in math lessons, Ho (2008) made suggestions on the ways it can be used in lessons. Thus, the emphasis that HoM was not sufficiently used about ten years ago caused the increased use of HoM in textbooks, but this still seems not sufficient for Singapore. Though Canada recommends the use of HoM in math textbooks, this is not practically applied in textbooks. Indeed, Canada is the country that least frequently used HoM elements relative to other countries.

The way the HoM elements in the math textbooks were presented was analyzed under the headings of famous mathematician, civilization, content type, whereabouts element is inserted and learning area. The findings of this study indicated that the HoM elements were concentrated around the learning areas of geometry, numbers and operations; the distribution of famous mathematicians and civilizations was closely related to the learning areas. The learning area of numbers and operations was only prioritized in the subject related to famous mathematicians in the textbooks of only one country. The common mathematicians were presented most in the learning areas of geometry and algebra. A total of 106 famous mathematicians were mentioned in the math textbooks. The famous mathematicians most mentioned among them and included in the textbooks of all countries were Al-Khwarizmi and Pythagoras. Given the importance of Al-Khwarizmi for algebra and Pythagoras for geometry as well as grade levels, this content perhaps meets the need in the curricula (MoNE, 2018). Also, famous mathematicians including Descartes, Archimedes, Euclid, Fibonacci, Eratosthenes,

Robert Record, Thales, Diophantus and Golbach were identified in the mathematics textbooks of multiple countries. Besides, mathematicians Cahit Arf, Thomas Harriot, Andrew Wiles, Theodorus were mentioned in the textbooks of only one country. These findings imply that the mathematics mentioned only in one textbook were proportionally presented most frequently in the textbooks of Canada and less frequently in the textbooks of Turkey. The mathematicians commonly mentioned in the textbooks of all four countries were proportionally compared with the HoM elements in these textbooks; in this comparison, Turkey ranked first whereas Canada ranked last.

According to Smestad (2003), HoM can allow for the understanding of the importance and role of mathematics in the society, and also ensure the students perceive mathematics is a human product, that is, it has a human side. Thus, HoM is perhaps a suitable tool to give students the message that they can do what their ancestors did or succeed like them; in this way, students can be motivated through examples of their ancestors (Fauvel, 1991; Jankvist, 2009; Ju et al., 2016; Mersin, 2019; Philippou & Christou, 1998). The tendency of the countries to present famous mathematicians was also examined; other countries, except for Turkey, presented mathematicians close to their culture and less frequently mentioned the mathematicians around Anatolia. The mathematicians commonly mentioned by the countries and only mentioned by one country were analyzed; the common mathematicians were close to the Anatolian or Middle Eastern geography whereas the mathematicians only mentioned by one country were somehow associated with the past of that country or notable in the near century. Moreover, factors such as geography, religion, racial and/or political reasons may be influential in the selection of famous mathematicians as well.

Inclusion of HoM elements and the mathematicians that students can relate to in these HoM elements would positively contribute to mathematics education, thus is supported by various researchers (Li & Fan, 2019; Philippou & Christou, 1998; Smestad, 2003). However, an unbalanced inclusion of these mathematicians may lead to the evaluation of mathematics as a corpus of efforts and achievements of a few genius mathematicians, as Ju et al. (2016) stated. HoM not only includes mathematicians, but also the period and civilization these mathematicians lived and offers a broader perspective towards how and why they worked under which circumstances, why they succeeded, how they practiced mathematics and what mathematics was all about (Toeplitz, 1963).

The civilization of Ancient Egypt, which was included in the textbooks of all countries, was the most presented civilization. Given the contributions of the civilization of Ancient Egypt to the learning areas of numbers and operations as well as geometry and measurement at secondary school level, it is plausible that the textbooks of all countries mentioned the civilization of Ancient Egypt. Moreover, the fact that Ireland and Turkey mentioned the civilization of Ancient Greece, that Ireland mentioned Rome, that Ireland and Singapore mentioned Europe, and that Canada mentioned Canada's Inuit supports the idea that the countries were affected from factors such as geography, ethnicity, religion and so forth. The educational importance of HoM lies in the fact that it helps us rediscover ourselves as cultural beings and understand the epistemological norms of others' performing mathematics as a historical-cultural construct Ju et al. (2016). For that reason, mathematics, as an information system that can be improved based on differences through communication, is a valuable tool for teaching students the power of diversity and the egalitarian nature of mathematics. In this regard, especially multicultural countries such as Canada should include more examples of HoM in their mathematics textbooks.

The findings of the country averages in relation to the order through which the HoM elements were presented in the subject show that HoM elements were presented either in the introduction section of the subject or as a part of the subject itself, or at the end of the subject/assessment sections, or individually, outside the subject. This finding is congruent with the findings of Incikabi et al. (2019). Only Canada presented HoM elements outside the subject in only one element. The reason that HoM elements were second mostly presented at the end/in the assessment part is that Turkey and Canada dramatically differed from other countries in this regard. However, as mentioned earlier, Turkey and Canada had different purposes. While Canada prioritized in-class activities such as measurement and intensifying, Turkey focused on out-of-class activities. The averages of the country

percentages, purpose of use and presentation of the HoM elements were analyzed; the sum of the use for intensifying and project-research was close to the presentation of the HoM elements at the end/in the assessment part. The idea that it is reasonable to present HoM elements in the introduction or as a part of the subject for motivation is supported by the finding that the sum of this presentation order is related to the purpose of motivation.

The HoM elements in the textbooks were generally presented in the introduction or as a part of the subject, for the purpose of motivation or informing, as history of concepts or formula-rule-solution. Analysis of the presentation of the HoM elements in terms of content type revealed contrary to the previous studies that (Baki & Butuner, 2013; Incikabi et al., 2019; Tan Sisman & Kirez, 2018) the countries focused on other categories, rather than providing only biographical information. However, this was not the case for Turkey; Turkey prioritized biographical information most among the other countries. These findings are congruent with the previous research on the HoM elements in the math textbooks of Turkey (Baki & Butuner, 2013; Erdoğan et al., 2015; Incikabi et al., 2019; Mersin & Durmus, 2018; Sahin et al., 2016; Tan et al., 2018).

Considering the average percentages, history of concepts was the most commonly used content type; Turkey and Ireland mostly used this content type, but Singapore and Canada preferred discussion-project most. Regarding the history of concepts, Ireland presented more than one famous mathematician and civilization within an element and thus focused on the developmental process of the concepts; on the other hand, Turkey only included brief snippets on the origins of the concepts, instead of the development of the concepts. Although Canada was lacking in terms of content, it, like Singapore, focused on discussion-project in presenting the content and had a balanced distribution in other areas. The current literature argues that integrating HoM into lessons as snippets is ineffective and insufficient to promote higher-order thinking skills (Ju et al., 2016; Xenofontos & Papadopoulos, 2015). To encourage higher-order learning, HoM elements should be presented in forms, other than snippets, to provide content that ensure that the relations between the past and the present are established in a solid way (Jahnke et al., 2002; Lawrence, 2008). Assessing the success of countries in TIMMS and similar exams through HoM elements may appear as a controversial method; but there are some studies that reveal that mathematics lessons with HoM increase student achievement (e.g. Albayrak, 2011; Awosanya, 2001; Bahadir Varol, 2019; Bayam, 2012; Ersoy, 2015; İdikut, 2007; Lim & Chapman, 2015; Ozcan, 2014).

This study also analyzed the distribution of the HoM elements in terms of learning area. Similar to the previous studies, it was found that the learning areas of geometry, numbers and operations were far more used than other learning areas. The lack of enough HoM elements or a balanced distribution of HoM elements in the learning area of data processing and probability in all countries may be related to the reasons such as the time allocated to the learning area, the inability to find enough content for this area, etc. The finding that Turkey, unlike other countries, had a more balanced content in the learning area of algebra may be associated with the advantage of presenting common mathematicians.

In a nutshell, the findings indicated that the countries prioritized affective aspects rather than cognitive and socio-cultural characteristics in the selection of HoM elements. They presented the mathematicians related to the subject based on affective characteristics and incorporated skills and cognitive characteristics into the elements as far as their choice allowed. From the textbooks examined in the past years, one may observe that HoM elements in the textbooks of the countries have improved. Further, this study suggested that Turkey and Canada review their HoM elements in terms of content. This study has examined the mathematics textbooks of Turkey and Singapore, Canada and Ireland, which were more successful than Turkey in international exams. Therefore, further studies may choose their sample based on different criteria and compare the HoM elements in the textbooks of different countries.

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International Journal of Progressive Education, Volume 18 Number 4, 2022

Developing a Reading Comprehension Support Program for Primary School Students with Specific Learning Disabilities*

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Abstract

Specific learning disabilities (SLD) is a general term referring to a heterogeneous group of disorders displayed by individuals with special needs. SLD refers to disorders in reading, writing and mathematics. A large proportion of students with SLD need support in reading as well as in reading comprehension skills, an important component and ultimate goal of reading. In this direction, this study aimed to develop the content of a reading comprehension program for second, third and fourth grade students with SLD. Designed as phenomenology which is a qualitative research approach, this study used semi-structured interview, observation, assessment tool administration, literature review and document analysis. Teachers reported that students with SLD have difficulties in reading, writing, reading fluency and reading comprehension; they lack self-confidence and need to be educated in special learning environments; they need support in Turkish and mathematics classes and a reading comprehension program is necessary for them. It was identified that expository and narrative texts and poems were used in primary school programs and some reading comprehension skills were acquired. There were two acquisitions related to reading comprehension in the SLD support program without any specifications as to how these should be taught and what content should be used. This study was limited to interviews conducted with five teachers and observations with 14 students with SLD and eight students with typical development. Although the studies on students with SLD have increased in Turkey in recent years, support programs that can be used at different education levels to improve reading, reading comprehension, writing and math skills for students with SLD are still limited. The program developed within the scope of this research was developed as printed material. Further studies can be planned to use the program in technological platforms by using tablets, computers, etc.

Keywords: Specific Learning Disabilities, Reading Comprehension, Reading Comprehension Program, Dyslexia.

DOI: 10.29329/ijpe.2022.459.6

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* This article prepared from first author's doctoral dissertation that supervised by the second author in Eskişehir Osmangazi University in Turkey.

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INTRODUCTION

Children with special needs display a significant developmental and educational difference from their peers as stated in the Special Education Services Regulation of Ministry of National Education (Acarlar, 2013; Ministry of National Education [MoNe], 2018). In general, special education aims to implement and evaluate an individualized, systematically planned education to raise individuals independent of adult support (Eripek, 2007). Children with specific learning disabilities (SLD) are included among the individuals with special needs. Learning disorders indicate a state of inadequacy in basic academic skills such as reading, writing and arithmetic without accompanying neurological, physical illness or intellectual disabilities. Researchers use the term SLD by adding the term "specific" to the concept of learning disorders to draw attention to the differences in the term which is sometimes confused with intellectual disabilities (Öztürk, 2002). Students with SLD, who form a heterogeneous group with varying characteristics experience a lack of academic achievement and have problems especially in reading, mathematics, written expression, language and speaking skills, memory, social and emotional areas, motivation and perceptual problems and may display other disorders such as attention deficit (Çakıroğlu, 2017).

Students are diagnosed with SLD through medical diagnosis and educational evaluation processes. A clinical assessment is conducted by the department of children and adolescent mental health and diseases based on the information received from teachers and family members about the learning problems experienced by the child. Intelligence tests are administered followed by the test batteries related to SLD and after the medical assessment, educational evaluation and diagnosis processes are carried out by a guidance and research center. An Individualized Education Plan (IEP) is prepared for the child with SLD after the educational assessment completed (Karaca, Tirit-Karaca, Çalış, & Yiğit, 2018).

Today, SLD is diagnosed according to the Diagnostic and Statistical Manual of Mental Disorders-Fifth Edition (DSM-5) medical diagnosis classification system of the American Psychiatric Association. According to this diagnosis system, there are three main classifications as impairment in reading skills, impairment in written expression and impairment in mathematics. DSM-5 Specific Learning Disorder Diagnostic Criteria are as follows; inaccurate or slow reading or reading with too much effort, difficulty in reading comprehension, difficulties in spelling or writing letters, difficulties in written expression, difficulties in number perception, number facts or calculation, difficulties with mathematical reasoning (Şen-Kösem & Bakacak, 2018). Since 42% of all 5.7 million students diagnosed with special education needs receive this diagnosis in the United States of America (USA), SLD is considered as a common disorder. While the statistical data on SLD is limited in Turkey, the ratio of students with SLD to all students with special needs is 3% (Çakıroğlu, 2017). It is known that students with SLD have the most difficulty in reading (85%) (Çakıroğlu, 2017; U.S Department of Education, 2014).

Dyslexia, the most common reading disability, is based on the inadequacy of the phonological processes of the language, which makes it harder to read and spell. 80% of students with SLD have problems with reading fluency and reading comprehension. Reading requires decoding the words and understanding what is read. Students need to use the prosodic features in reading. The ultimate goal of reading is to understand what is read. In regards to reading texts, students should be assessed for the criteria of accuracy, automaticity, prosody and reading comprehension and receive support in this direction (Baydık, 2015). Reading has five basic components: phonological awareness, phonics, vocabulary, fluency and comprehension. Various strategies and methods can be used for students with SLD to support reading fluency such as, repeated reading, peer assisted teaching, mutual teaching, to support reading comprehension such as, increasing the processing speed, strategy training, understanding the main idea, and to improve basic reading skills such as, phonological awareness training, programmed reading training, multi-sensory reading method, neurological effect method and Gass analysis (Balıkçı, 2017). Difficulties in reading are the most problematic area in SLD and there are difficulties in decoding and/or reading comprehension. In general, letters-syllables are confused, the endings of words are made up, the places of letters/syllables are changed, sounds are confused and

it is difficult to understand what is read for these students. In addition, students with SLD have difficulty in phonics (Karaca et al., 2018).

The programs developed and used for students with SLD for reading, reading comprehension, and reading fluency have been investigated and evaluated in the national literature. The studies on the reading comprehension skills of students with SLD were investigated and concluded that studies on the reading comprehension skills of students with SLD are rather limited; the majority of these studies compared reading comprehension skills of students with and without SLD; the studies were mostly conducted with third, fourth, sixth and eighth grade students; the majority of these studies was designed with a single-subject research design or correlational model and there were significant differences between the groups in intrinsic motivation, prior knowledge, reading speed, strategy use and phonological skills (Pürsün & Sarı, 2019). Another study evaluated the relationship between verbal problem solving and reading comprehension skills of students with and without SLD and concluded that reading comprehension was a predictor of verbal problem solving, and compared to students with typical development, students with SLD received lower scores in reading comprehension, completed tasks in longer time and solved fewer questions correct (Altındağ-Kumaş, Delimehmet-Dada, & Yıkmış, 2019). Scientific articles, master's theses, specialization theses in medicine and doctoral theses published during the period of 1972-2017 were examined in the study titled “Review of studies on specific learning disabilities in Turkey”. According to the study results, the number of studies in the field increased in the last 10 years, studies were mainly focused on the assessment and support of reading skills since the individuals with SLD experienced the most problems in reading and these studies were mostly carried out with primary school students. It was also reported that scientific information regarding SLD is still very limited although the studies conducted in Turkey have significantly increased in the last 10 years (Görgün & Melekoğlu, 2019). The study titled “The relationship between vocabulary and reading comprehension skills of students with learning disabilities and with typical development” concluded that students with SLD performed lower than their typically developing peers in vocabulary and reading comprehension skills (Delimehmet-Dada & Ergül, 2020). In their study, Gersten, Fuchs, Williams, and Baker (2001) evaluated intervention research on the reading comprehension skills of individuals with SLD in the last 20 years. According to this study, there is an increase in socially mediated instruction; there is a need to teach multiple strategies to improve comprehension. Robinson, Meisinger and Joyner (2019) evaluated the effect of reading oral and silently on the reading comprehension skills of individuals with SLD (N=77) attending primary school in their study. According to the results of the research, it was determined that the students who read oral understood better than the students who read silently and their reading comprehension improved across the years. Khasawneh and Al-Rub (2020) revealed the effect of visual word composition teacher technique on improving reading comprehension skills of individuals with SLD (N=104). According to the results of the research, a significant positive difference was determined in the reading comprehension skills of the students who were taught visual word composition technique in the experimental and control groups. Berkeley, Scruggs and Mastropieri (2010), in the study conducted for of individuals with SLD between 1995 and 2006, evaluated the studies on reading comprehension teaching as a meta-analysis; although it was lower than previous meta-analysis results, it was concluded that reading comprehension intervention programs were generally very effective. In the light of the aforementioned information, this study aimed to develop the content of the reading comprehension program to be used with second, third and fourth grade students with SLD.

The Rationale for this Program

Reading comprehension is one of the most important components of reading skills. Individuals with SLD have problems in reading and therefore they need to be supported in regards to reading skills in general and reading comprehension skills in particular. However, the methods, strategies and programs aimed at improving reading comprehension skills for individuals with SLD in Turkey are rather limited. Hence, this program was developed, implemented and evaluated to meet this need in Turkey. It is believed that the program developed in the framework of this study will help improve the reading comprehension skills of primary school students with SLD and it will contribute

to the national literature in this direction. The program can be used in individual support education activities in resource rooms in schools and in special education and rehabilitation centers.

METHOD

Context and Research Design

Research permission was obtained from Eskişehir Provincial Directorate of National Education and ethical compliance certificate was received from the Social and Human Sciences Scientific Research and Publication Ethics Committee of Eskişehir Osmangazi University. Qualitative research method was used in this study. When quantitative measures and statistical analyzes are not suitable for the existing problem, qualitative research is preferred to explore the problem and issue at hand, to understand the context in which the participants addressed the problem and to understand it in more depth (Bal, 2016; Croswell, 2013). Phenomenological design, one of the qualitative research methods, was used in this study. In phenomenology, the perceptions and understandings of a small number of participants are questioned and their experiences are examined in depth. In addition, observation, written and visual materials can be used as support data (Ersoy, 2017).

Research Instruments and Procedures

A program dedicated to support the reading comprehension skills of students with SLD was aimed to be developed after the following stages: program design, the philosophy of the program, the educational philosophy of the program, the program development model, the rationale of the program, the needs analysis and evaluation, observation, administration of the measurement tool, literature review, review of the existing programs, examination of the SLD support education program. In program development processes, first of all, it is necessary to identify the design of the program to be developed. Subject-centered program design and process design, which are widely used designs in educational environments, were used as program development design models since they were found to be suitable for the program (Demirel, 2017). This program was developed in accordance with subject-centered program designs in which the students are taught how they learn best to improve their reading comprehension skills. The program was based on idealism and realism as a philosophy and educational philosophy of the program was based on perennialism and essentialism.

“Demirel Curriculum Development Model in Education” (DEPGEM) developed by Demirel (1992) in Turkey, which corresponds to the Taba-Tyler Model, was adopted as the program development model. The stages of DEPGEM program development are as follows: Planning, preparation/development, testing and evaluation, implementation, and sustainability (Demirel, 2017). While this model is more suitable for general education programs, it is used in special education as well. The program developed in the framework of this study aimed to develop reading comprehension skills of the students with SLD by teaching them pre-reading strategies, reading strategies and post-reading strategies. In curriculum development, first of all, the need for the curriculum should be identified and whether the program goals meet these needs should be clarified (Demirel, 2017). The first stage in the development of training programs is the identification and analysis of the need. Interviews, knowledge tests, brainstorming, workshop technique, Delphi technique, observations, questionnaires/scales and document analysis techniques are used while performing the needs analysis (Adıgüzel, 2016).

In this context the following tasks were conducted: observations (conducted with students with SLD and with typically developing peers), administration of the measurement tool (Oral Reading Skills and Comprehension Test-II [SOBAT®-II] (Melekoğlu, Erden ve Çakıroğlu). for students with SLD to identify their reading comprehension levels in order to demonstrate the need, literature review (relevant national and international literature review and analysis), examination of existing programs (examination and evaluation of programs related to reading comprehension in general education, examining and evaluating reading comprehension activities in the support education programs for

individuals with SLD) and semi-structured interviews (one pilot interview, and with five teachers working with students with SLD).

PARTICIPANTS

In phenomenological research, participants can be determined by criterion sampling technique, one of the purposeful sampling techniques, if the number of people with experience on the examined issue is high (Creswell, 2007; Ersoy, 2017). The criteria for the individuals who were interviewed in the framework of this study were identified as follows: to be actively teaching at primary school and to be working with a primary school student with SLD at the time of the study. Participants were selected from among teachers who worked in public schools or special education and rehabilitation centers. 14 students with SLD were observed in the special education and rehabilitation center and eight students with typical developmental patterns were observed in their classrooms at the public school. The measurement tool was administered to students with SLD.

Teacher Interviews

Interview questions were developed in line with the sources and studies in the literature to conduct the semi-structured interviews with the participating teachers. Interview questions were sent to five experts with doctoral degrees and qualitative research experience. According to the expert evaluation form, the questions were arranged and finalized. The interview questions were then sent to five experts who had doctorate degrees and qualitative research experience to seek expert opinion. Based on the feedback received from the expert assessment, the questions were reviewed and finalized. In order to check the clarity of the questions and to minimize possible problems in the upcoming interviews, a pilot interview was conducted with a teacher who had a bachelor's degree in the field of special education and was still actively teaching. At the end of the pilot interview, it was determined that the questions were understandable and covered the subject. Then, semi-structured interviews were conducted with five teachers. Before the interviews, teachers filled the interview contract and examined the interview guide. What was said in the interviews was noted and also recorded with a voice recorder.

Data Analysis

Following the semi-structured interviews; audio recordings for each teacher were transcribed. A coding key was created for the interview by establishing categories under each question item. Interview records were analyzed according to this coding key. Based on the interview coding key, the researchers marked it consensus when they had the same opinion and marked it as disagreement when they had different opinions. “In qualitative research, the opinions of researchers and experts are compared for the reliability of the data collected by the interview method and the reliability of research is calculated with the following formula: Agreement/(Consensus+Disagreement) X 100 (Miles & Huberman, 1994). The mean reliability was calculated as 93.18% in this study. In order to ensure confidentiality, the teachers were given code names as Teacher 1, Teacher 2... etc. The collected data were analyzed by descriptive analysis. For student observation, the answers provided by the students to the reading comprehension questions were recorded. Reading passages were categorized according to the grade level in the current primary school program.

RESULTS

This section presents the findings in regards to teacher interviews, examinations of existing primary school programs, examination of SLD support program, observation results, administering the measurement tool, literature review, development of the teacher’s guide and student workbook process, and program’s goals and behaviors. Semi-structured interview results were analyzed through descriptive analysis and the answers to the questions were presented as frequencies. In addition, teachers were quoted by using their code names.

Table 1: Themes, Sub-Themes and Frequencies Obtained from Teacher Interviews

Themes	Sub-themes	Frequency
Characteristics of students with SLD according to teachers	Difficulty in reading	3
	Difficulty in writing	3
	Lack of self-confidence	2
	Mistakes in reading fluency	2
	Difficulty in reading comprehension	2
	Difficulty in mathematics	2
	Learned helplessness	2
Courses/subjects that students with SLD need support in	Turkish	5
	Mathematics	4
	Reading Comprehension	3
	Reading	3
	Writing	2
Status of experiencing problems and the types of problems experienced in reading comprehension activities	Yes, there are problems	4
	Problems in answering five WS and one H questions	3
	Inaccurate or erroneous reading	1
	Problems in orally transmitting what is read	1
	Problems about getting the time and place	1
Suggestions for the reading comprehension problems	Teaching appropriate strategies	2
	Extensive reading	2
	Using audio-visual elements	1
Suggestions for program content, method, duration, setting and assessment to improve reading comprehension skills	Individual assessment	5
	20-30 minutes of implementation	5
	Audio-visual elements	3
	Having a low number of students during activities	3
	Computer	2
	Story/word cards	2
	Audio recording	2
	Standard measurement tools	2
Suggestions for pre-reading strategies, during-reading strategies and post-reading strategies	Asking questions about the visuals	4
	Underlining the important parts	4
	Arousing curiosity	3
	Getting students' attention	3
	Estimation/prediction	3
	Adjusting reading speed	2
	Using prior knowledge	2
	Summarizing	2
	Repeated reading	2

When they were asked what they knew in regards to the characteristics of students with SLD, teachers stated that students with SLD had difficulties in reading (f=3), had difficulties in writing (f=3), lacked self-confidence (f=2), made mistakes in reading fluency (f=2) and had difficulties in reading comprehension (f=2). T2 expressed the following: "*We encounter such learning disorders when the person's intelligence is normal or above normal, but cannot get the desired output from training. There are different types of SLD, such as difficulties in reading and writing, difficulties in mathematics. In regards to reading, I know that there are problems such as skipping syllables, adding letters, getting confused in the spelling of b, d, p, getting confused about days, seasons and measuring time, getting confused in regards to directions, feelings of dislike of mathematical symbols, difficulty in reading comprehension or reading with too much effort, boredom in reading activities or not wanting to read at all*". When asked what kind of training they received about teaching the students with SLD, teachers stated that they received in-service training provided by the Ministry of National Education (f=2), they took courses at the university (f=2) and they attended seminars and congresses (f=2). T3 expressed the following opinion: "*I received training on inclusive education via the in-service training provided by the National Education. Apart from this, inclusive education was*

included among our courses at the university; there was a section on inclusion in the guidance courses we took".

When asked what they know about teaching students with SLD, teachers stated that special learning environments should be created for students (f=3), education should be structured according to the student's ability (f=2) and these students should receive support from special education classes, resource rooms and special education and rehabilitation centers (f=2). T2 expressed the following opinion: "*I know that special learning environments should be created for their education, they should be supported with visual and auditory elements but first of all, it is necessary to discover how they learn*". When asked about the courses/subjects that students with SLD needed support in, teachers cited Turkish classes (f=5), mathematics classes (f=4), reading comprehension activities (f=3) and reading activities (f=3). T4 expressed the following opinion: "*They experience the most difficulties in reading, Turkish and mathematics during primary school. I have observed that, among regular classes, they have the most difficulty in English when their reading and writing abilities reach a certain level*".

When asked about their expectations from individuals with SLD; the teachers stated that they expected their students to achieve at their own grade levels (f=1), expected their students to have confidence about achieving good results (f=1) and expected the families of their students to reduce their pressure on students about failure (f=). T4 expressed the following opinion: "*Actually, the expectations from these individuals and their families are somewhat common. They are pushed to their limits. Well, I believe that the student can progress a little more if there is less pressure. In short, the expectations of teachers working in regular National Education schools are that these student progress at their own grade levels*". When asked about the status of experiencing problems during reading comprehension activities and the types of problems experienced, teachers responded that they experienced problems (f=4) and they mostly experienced problems in answering five WS and one H questions (f=3). T2 expressed the following opinion: "*There are great difficulties in reading comprehension. When a teacher has a student read in the classroom, it becomes a bit of an annoyance because the student gets stuck on words too much*". T4 expressed the following opinion: "*When fluent reading is somehow achieved, the student then may experience problems in conveying the text or making sense of the text. Especially verbally transmitting what is read is one of the biggest problems that I observe. In addition, when I ask five WS and one H questions about the text, the student cannot answer all of them when the text is read just once*".

When asked about the characteristics of students who usually had problems with reading comprehension; teachers answered that they could not read written materials such as books (f=3), they were shy, passive, introverted (f=3) and they did not like to read (f=2). T1 expressed the following opinion: "*My student doesn't like to read. S/he doesn't read many books".* T2 expressed the following opinion: *"The most important characteristic is that they do not read books, there is a prejudice against books, against all written materials even. When it comes to reading, these students are shying, withdrawn and refuse to be active*". When asked about the reading comprehension levels of individuals with SLD, teachers stated that they understood what they read at a level of 30%-40% (f=2), they understood what they read at a level of 50%-60% (f=1) or it varied from student to student (f=1). T1 expressed the following opinion: "*It actually changes from student to student*". T4 expressed the following opinion: "*So, when I think of the students I teach, I have observed problems with reading comprehension in almost all of them. When we express this as a percentage, they can understand a text at 30% to 40% level in one reading*".

When asked about the general problems encountered in the reading comprehension skills in individuals with SLD, teachers said that they had problems in vocabulary and meaning (f=3) and they made errors in reading (f=1). T2 expressed the following opinion: "*In general, they experience difficulties in understanding and making sense of words, they skip syllables, add letters, also they confuse letters b, d, p; they add letters*". T4 expressed the following opinion: "*They have difficulty in distinguishing the main elements of the text, in finding where the points to pay attention are located in the text. Because of this, they have comprehension problems.*" When asked how long teachers

experienced these problem/problems, they cited the following: starting from the first grade (f=1), starting from the second grade (f=1) and for a long time (f=1). T3 expressed the following opinion: "*I mean, I have been observing the student's condition since the second grade, that is, since the age of seven or eight*". T4 expressed the following opinion: "*They have been facing this problem since they started training. It is going on for quite some time*".

When asked about the courses in which the students with SLD usually experienced problems, the teachers cited the Turkish classes (f=5) and the mathematics classes (f=4). T2 expressed the following opinion: "*One of them is struggling with math, especially has difficulties in measuring and reading the time. The other has difficulties in reading comprehension and Turkish lessons*". T4 expressed the following opinion: "*Turkish, mathematics and English. Yes, these are the three courses in particular where my student has the biggest problem*". When asked how often problems occured; teachers provided the following answers: often (f=2) and sometimes (f=2). T2 expressed the following opinion: "*I have encountered this problem in all of the lessons so far.*" T5 expressed the following opinion: "*When everything is going well with our students, the next week comes, and it is like we are back to beginning, so my answer is sometimes* (T5)".

When asked how the problems related to reading comprehension skills of individuals with SLD could be solved, the teachers cited teaching the students to make sense of the text with the appropriate strategy (f=2) and by reading a lot (f=2). T3 expressed the following opinion: "*I think individual support is a must. When it is detected sooner, different methods can be applied.*". T4 expressed the following opinion: "*We can solve these problems by choosing reading passages suitable for the level of the student and teaching them to make sense of the text with the appropriate strategy*. (T4)". When asked why a program should be developed for individuals with SLD, teachers replied that there was a need (f=2) and there was no existing programs (f=2). T3 expressed the following opinion: "*First of all, there is such a need. Even when preparing the IEP, I cannot find anything for my student's level*". T5 expressed the following opinion: "*I believe that there is not sufficient material and we sometimes get stuck and do not know what to do*".

When asked what the reading comprehension skills development program to improve of individuals with SLD should include, the teachers opted for visual elements (f=2), interesting materials (f=1) and suitable fonts for children's levels (f=1). T1 expressed the following opinion: "*They love contemporary things, the program should include texts that they find interesting, they won't be bored with and that will attract their attention. They do not like the Keloğlan of our anymore, they think of different things. The font is better for these children, the same with the pictures*". T3 expressed the following opinion: "*Let me give you an example from my own student, the activities should not includ much writing. Instead, there may be activities where he can express himself verbally in different ways*". When they were asked about the tools, materials/methods that could be used in the program to be developed teachers cited visual and auditory items (f=3), computer (f=2), story, word cards (f=2) and audio recording (f=2). T3 expressed the following opinion: "*I think there should be something he can actively participate in such as visual, auditory, materials*". T4 expressed the following opinion: "*For example, I really like the voice recorder. Sometimes I have the children listen to the story they read. They realize their own mistakes and I think they understand better when they have verbal feedback from what they read. I think the use of concept networks and story maps are effective as methods*".

When asked about the setting that should be prepared for the individual with SLD, the teachers answered that the number of students should be low (f=3), that the setting should not distract students' attention (f=3) and that the setting should be supported with visual materials (f=2). T3 expressed the following opinion: "*The class size should not be too crowded, it should definitely be technologically supported, too, but depending on the child's special learning disability maybe too much visual materials and the presence of different materials in the classroom can be distracting.*" T4 expressed the following opinion: "*It is generally observed that students with SLD have attention deficit problems as well. Educational settings need to be free of arousing stimuli, that is, all stimuli should be completely based on education. Appropriate light, suitable table, suitable chair are all very*

important in terms of not tiring the eyes and an environment with materials that will attract the attention of the child provides higher motivation for learning. A class can be organized with appropriate prizes, games". When asked about the proper duration for the implementation of the developed program and the duration of a teaching session, teachers opted for 20-30 minutes (f=5) and stated that the duration depended on the student's case (f=3). T1 expressed the following opinion: "*Such students….we can't actually teach for 40 minutes even with our regular students. The lesson should be 20-25 minutes in total*". T2 expressed the following opinion: "*I think the duration of a teaching session should not exceed 20 minutes. How long it takes depends on the student's progress and the path we take*".

When asked about their ideas on measurement and evaluation after the implementation of the program that would be developed; teachers answered that measurement and evaluation should be done with individual assessment (f=5), with charts (f=2) and with standard tools (f=2). T2 expressed the following opinion: "*Assessment and evaluation should be process-oriented. For example, I am teaching a subject and I see that he has achieved very good things in the process, but the result is wrong. Now, if I focus on the result there, I think that it will put too much stress on that child so I put for the self-evaluation form*". T4 expressed the following opinion: "*Of course, it would be great to develop a standard tool, but if a standard tool is not available, similar tools used in teaching can be used in evaluation later on*". Teachers were asked whether they believed that the program would be beneficial when it was developed. Teachers said yes, they believed it (f=4) and yes, but only if it was prepared accurately (f=1). T2 expressed the following opinion: "*I believe it, of course. I do not think that any program for which so much work is done will be bad*." T2 expressed the following opinion: "*If this happens correctly, if it is prepared right, of course, I believe it*".

When asked about what sort of pre-reading activities should be implemented to improve reading comprehension skills, teachers stated that questions should be asked about the visuals (f=4), student curiosity should be aroused (f=3) and it should be ensured that students pay attention (f=3). T1 expressed the following opinion: "*Their curiosity can be aroused and they can be curious, different pictures can be used to get their attention, pre-reading activity can start with pictures, titles can be used as a starting point, students can skim and scan the text, students can be allowed to act out their predictions about the text or teacher can give prompts to get attention such as hmmm, let's do something like this and, let's see if it will go on with the text*". T4 expressed the following opinion: "*Well, current topics that will attract the attention of children can be selected. First of all, there should be a visual in the text, students should comment on this visual and then they should review the text in general; review the title, review the bold parts in the text, if any. The important elements of the text can be written in bold; the main character, the event, the venue, the time. I think these will provide more permanent and fluent learning*".

When asked about what sort of during-reading activities should be implemented to improve reading comprehension skills, the teachers cited highlighting the important parts in the text (f=4), predictions (f=3), adjusting the reading speed (f=2) and using prior knowledge (f=2). T1 expressed the following opinion: "*They love predictions. Reading speed should be adjusted, I mean, if they have trouble reading, they may be a little slow. They like highlighting important parts. We do that in class with highlighters, they like it. I can also add mental imagery*". T4 expressed the following opinion: "*Using prior knowledge can be beneficial in the following manner: They can make predictions. The reading speed of the child can be determined via assessment at the beginning and texts can be selected not to exceed a certain time to read. I think the use of highlighters is effective. At first, the teacher can model how to highlight the important parts in the text*".

When asked about what sort of post-reading activities should be implemented to improve reading comprehension skills, the teachers cited summarizing (f=2) and repeated reading (f=2). T3 expressed the following opinion: "*Asking the student to tell you briefly what he remembers is more effective than all questions. For example, you can ask the student to change the title of the text. After reading the text, the student adds his own interpretation, at least. You can ask question such as –what do you think the title should be? Or which character do you think you liked the best?-*". T4 expressed

the following opinion: "*I usually have them reread the text. Before the repeated reading, I ask them about what they have understood from the text the characters in the text... Sometimes I summarize the text briefly myself. I think both are effective*". When asked if they had any other comments to add, the teachers stated that they thought family support was important (f=2), they wanted the program that would be developed disseminated across Turkey (f=1) and urged that students should be taught internal motivation about reading (f=1). T1 expressed the following opinion: "*I think family is very important for these students.*" T4 expressed the following opinion: "*I think valuable teachers like you should develop programs. I recommend this program to be used as a standard across Turkey. If we follow a certain systematic, we can really avoid the problems experienced by all students. I want this program to be standardized and disseminated*."

Examination of Existing Primary School Programs

First of all, reading, reading comprehension goals and reading passages developed for the individuals with typical development at primary school level were examined. There are seven goals related to comprehension in the first grade, 10 goals in the second grade, 18 goals in the third grade and 25 goals in the fourth grade. After students learn how to read texts or poems, they are expected to answer comprehension questions (to talk about what, how much, which, how, why, and why). In addition, there are activities about selecting a new title suitable for the reading text or poem, finding the subject and main idea of the text and talking about what they would do if they were the characters in the text.

Table 2: Types and Numbers of Primary School Level Reading Passages

	Expository Texts	Narrative Texts	Poetry
1st grade	1	7	4
2nd grade	7	7	4
3rd grade	8	7	4
4th grade	9	8	4

Examination of SLD Support Education Program

Learning Disability Support Education Program was accepted with the decision of the Ministry of National Education, Board of Education (dated 26.12.2018 and numbered 287). The program consists of learning readiness (300 class hours), literacy (250 class hours) and mathematics (200 class hours) modules. The literacy module includes the goals related to reading comprehension (such as establishing a cause-effect relationship with the text, establishing a cause-effect relationship between events).

The program states that visual and auditory stimuli should be used in reading comprehension and that learning largely depends on reading comprehension. It is stated in the program that reading has three dimensions as cognitive dimension, affective dimension and behavioral dimension and deficiency or inadequacy in any of these dimensions will negatively affect reading. Hence, the individual will be unable to fully and correctly comprehend what is read. Currently, this support education program is implemented in special education and rehabilitation centers to students with SLD. The support education program provides detailed information about the program modules, implementation periods, goals and reading and reading comprehension activities included in the program. However, there is no information about which method and material will be used in implementing the program.

Observations

A total of 14 students who were diagnosed with SLD and who were given reading comprehension activities within the scope of individual support education program were observed. Participating students ranged from eight to 14 years old. The students read a reading passage and

answered the reading comprehension questions, which usually consisted of five questions below the text. Out of a total of 79 questions, they answered 54 questions correctly (68% of correct answers) and answered 25 questions incorrectly. In addition, eight students with typical developmental patterns were observed in grade-appropriate reading comprehension activities. Out of a total of 40 questions, they answered 39 questions correctly (the correct answer rate was 98%) and answered one question incorrectly.

Administering the Measurement Tool

Within the scope of measurement tool administration; SOBAT-II was administered to two primary school students with SLD. Reading aloud score of the first student whose chronological age was 9 years and 11 months was (SOP)=79 and in general it was found that the student's reading fluency and reading comprehension levels were significantly lower than his/her peers. Reading aloud score of the second student whose chronological age was 9 years and 11 months was (SOP)=61 and in general, it was concluded that the student's reading fluency and reading comprehension levels were significantly lower than his/her peers.

Literature Review

In the framework of this study, national and international literature on the reading comprehension skills of students with SLD was examined. As a result of the review; eight national articles were found on reading comprehension skills of typically developing students; three national theses and 17 articles and 14 international articles were found on the reading comprehension skills of students with SLD and three theses and four articles were found on the reading comprehension skills of students with and without SLD. Accordingly, while the national literature includes limited number of studies on the reading comprehension skills of students with SLD, the international literature, especially in the United States, has studies (intervention program, efficacy studies, meta-analysis, experimental, single-subject, etc.) aimed at improving the reading comprehension skills of students with SLD. The analysis of these studies demonstrated that reading comprehension skills were found to be important for academic development, especially repeated reading and visual comprehension strategies were widely used and there were positive developments in students' reading comprehension skills when different intervention programs were used.

Observations were conducted, the measurement tool was administered, literature was reviewed, existing programs were investigated and interviews were held with teachers within the scope of needs analysis. This needs assessment revealed the need for a program to support the reading comprehension skills of individuals with SLD. Studies show that individuals with SLD have difficulties in reading comprehension and although current curriculums target the development of reading comprehension skills for individuals with SLD, the programs which provide adequate guidance to teachers on how to teach these skills are very limited. The international literature shows that the programs for reading comprehension are used effectively for individuals with SLD, but the programs specifically targeting reading comprehension skills are limited in Turkey. Teacher interviews demonstrated the need for such programs which would be highly beneficial for teachers. Based on the needs analysis (including the identification and evaluation of the needs in this field), it was decided to develop a program to improve the reading comprehension skills of students with SLD. In this direction, a teacher's guide, a student workbook and an implementation guide were developed. After the development of the program, an efficacy study is planned to be conducted with students with SLD.

Development of the Teacher's Guide

The guide includes the contents, objectives, benefits of the program, information on how to use the guide, outline, schedules, programming, organization of sessions, information on how to use the student workbook and implementation of teaching sessions. In addition, there are sample training practices regarding the implementation of the program.

Development of the Student Workbook

Primarily, reading comprehension strategies were used in this program prepared for the development of reading comprehension skills. The student workbook consists of 60 narrative and expository reading passages for the second, third and fourth grade levels: 10 second grade, 10 third grade and 10 fourth grade narrative reading passages and 10 second grade, 10 third grade and 10 fourth grade expository reading passages. The levels of reading passages were calculated according to the formula for Readability Value for Turkish (Ateşman, 1997). The student workbook includes the contents section, reading passages which are color coded for each grade level, reading comprehension questions and a dictionary. The page borders are yellow, orange and blue for the second grade reading passages, the third grade reading passages and the fourth grade readings passages, respectively, to facilitate implementation.

Goals and Behaviors

Program philosophy, education philosophy and program design were taken into consideration while the targets were identified. Bloom's Taxonomy was used in identifying the targets. The progressive goal writing approach was based on Bloom's tiered classification approach. In this approach, priority is identified (cognitive, affective and psychomotor) first and then the level related to the specific domain is determined. Targets and behaviors related to the level are identified and listed (Demirel, 2017). This program consists of a total of 13 goals and 33 behaviors. The behaviors that will be acquired by the students in the program are identified as domain, level and target. The identified targets are included in the implementation guide (Domain: Cognitive, Level: Comprehension, Goal: S/he tells the things to be considered about reading comprehension. Behaviours; s/he tells what to do before reading in order to understand the piece to be read. S/he tells what to do during reading in order to understand the piece to be read. S/he tells what to do after reading in order to understand the piece to be read).

DISCUSSION, CONCLUSION, RECOMMENDATIONS

Especially the reading skill is the most common problem in SLD. Reading comprehension skill is one of the most important components of reading skill. Semi-structured interviews were conducted with teachers and analyzed descriptively in this study to develop a program to improve reading comprehension skills of primary school students with SLD. Reading comprehension activities of students with and without SLD were observed. In addition, the reading comprehension acquisitions included in the primary school curriculum and the SLD support education program were examined in detail.

Teachers reported that students with SLD have difficulties in reading, writing and reading comprehension; they lack self-confidence and they experience problems in reading fluency. According to teachers, students with SLD need to be educated in special learning settings, they need the highest level of support in Turkish, mathematics and reading comprehension activities. Teachers voiced their desire for their students to be able to learn at their own grade levels and they expect them to be confident in themselves. The need for a reading comprehension program with interesting visual and auditory and content was expressed by the participating teachers and according to teachers, reading comprehension activities should be organized in an environment where the number of students is low, the duration of the activity should be between 20-30 minutes, pre-reading, during reading and post-reading strategies should be used and the students should be evaluated individually.

Based on the examination of the existing primary school programs, it was observed that there are expository and narrative texts and poems at every grade level with various goals for reading comprehension skills. The examination of the SLD support education program demonstrated the existence of two goals related to reading comprehension without any specification as to content or method. Students with and without SLD were observed in reading comprehension activities and it was found that students with typical developmental patterns had 98% accuracy in reading comprehension

questions, while this rate was 68% for the students with SLD. The measurement tool was administered to two students with SLD and it was concluded that their reading fluency and reading comprehension skills were lower compared to their peers.

The relevant literature points to findings parallel to the research findings in this study. Observation of the students with typical development and students with SLD in this study showed that students with typical developmental patterns provided accurate answers at higher rates in reading comprehension activities. Similarly, it was concluded that students with SLD scored lower than students with typical development (Pürsün & Sarı, 2019). In the interviews held with the teachers, it was concluded that the students had difficulties in vocabulary and reading comprehension. Similarly, it was reported that students with SLD performed lower than their normally developing peers in vocabulary and reading comprehension skills (Delimehmet-Dada & Ergül, 2020). The studies conducted to improve the reading and reading comprehension skills of students with SLD (Akyol & Ketencioğlu-Kayabaşı, 2018; Berkeley, Scruggs & Mastropieri; Dağ, 2010; Duran & Sezgin, 2012; Gersten, Fuchs, Wiilliams, & Baker, 2001; Khasawneh & Al-Rub, 2020; Özer-Sanal, 2020) found that the interventions applied to students seemed to be beneficial. In addition, when the international literature is examined, intervention programs applied to students with special learning difficulties are very effective in improving students' reading comprehension skills (Berkeley, Scruggs & Mastropieri, 2010), similar to the studies, which are limited in Turkey and the program developed within the scope of this research is effective in students with SLD is thought to be. It is believed that the reading comprehension support program developed within the scope of this research will contribute to students' reading comprehension skills.

This study is limited to five teachers who were interviewed, two students to whom the assessment tool was implemented, 14 students with SLD and eight typically developing students who were observed during reading comprehension activities. Although there has been an increase in recent years in the number of studies conducted with the students with SLD in Turkey, supportive education programs which can be implemented at different levels of education to improve reading, writing and math skills of students with SLD are limited. The studies on reading are more prominent in the literature and it is believed that it would be beneficial in future studies to focus on writing and mathematics as well. The program developed within the scope of this research was prepared as a print material. Further studies can be planned to adjust the format of the program to be used with tablets, computers, etc. and to study its efficacy.

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International Journal of Progressive Education, Volume 18 Number 4, 2022

The Dream School: Exploring Children's Views About Schools

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Abstract

Children should have a say in matters that concern them such as the characteristics of their learning environments, and their imaginations can be used when designing these environments. This study aimed at revealing the dream school characteristics of children attending kindergarten classes and primary school, and was designed as a case study. The study group consisted of 5 to 10 years old children from three schools with different socio-economic status. In the data collection process, semi-structured interviews were conducted with the children about the characteristics of their dream school. In addition to this, they were requested to draw pictures of these schools and a second interview was held for these drawings. Findings showed that children had fantastic and creative dreams as well as dreams about the socio-emotional and physical environments of the schools. These findings were presented comparatively according to school level. Taking these findings into account, the characteristics of the dream school are important in terms of changing and transforming the ongoing school systems. This way, the basis for creating learning environments designed according to children's interests and needs will be provided and the children will feel better and feel that they belong to these environments.

Keywords: Dream School, Children, Views, Learning Environment.

DOI: 10.29329/ijpe.2022.459.7

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INTRODUCTION

It can not be ignored that children's perspectives are as valuable as the perspectives of the teachers and school administrators to understand the realities of education and training processes in the school. Children participate to school at a basic level by enrolling and/or continuing their education. However, the concept of child participation is a broader expression that means they are respected and valued as a member of the community (Flutter & Rudduck, 2004). Reasons such as adults' defining and controlling the mechanisms for children's participation in school and the issues they make decisions set a limit for the words children can say and result in slight progress towards student participation (Jones, 2017). Kostenius (2011) states that despite all legal regulations of national institutions, the psychological health and well-being of school-age children are declining and there are problems in the ethical values of a school system where children are allowed to express themselves, but their opinions are not taken into account in the decision-making process. The children are one of the important elements of the psychosocial environment in schools and the idea that children's participation in issues related to them at school benefits them to develop their good relations with their teachers and their learning experiences is increasingly accepted.

Children's imaginations should be used in the design of schools, the obstacles to their dreams should be discussed with them, and their right to dream and fight for their dreams should be emphasized (Freire, 2005/2019). Their opinions should be asked and taken into account for the development of schools. Participation of students in research processes on school development creates a mutual win-win situation in terms of both the establishment of positive and respectful school culture and the ability of students to actively influence their own lives (Bergmark & Kostenius, 2009). Students who have the opportunity to participate in the research process can reveal what works well in schools or what can be improved by reflecting on school practices and taking action. A study aiming at reconstructing schools that provide the skills and qualifications students will need in the 21st century, both in terms of physical and educational experiences, shows that there can be wide-ranging discussions between students and adults about the future visions of schools. The students constitute an important part of the study process by sharing their dreams for the schools of the future. In some studies, it was determined that they valued large, bright, modern, and well-maintained places with sufficient resources, and established a link between positive learning environments and positive behaviors (Frost & Holden, 2008).

In recent years, there has been an increase in studies that reveal findings of the characteristics of an "ideal school" for children rather than studies describing children's opinions on learning environments see (Bland, 2010, 2012; Flutter, 2006; Frost & Holden, 2008; Kangas, 2010; Kostenius, 2011; Simmons, Graham & Thomas, 2015; Valentim & Freire, 2019). In studies carried out on the "ideal school" phenomenon, children were asked to write stories (Kangas, 2010) or draw pictures (Bland, 2010, 2012; Kostenius, 2011) and interviews were arranged with children. However, schools serve as a learning and socializing environment for children, and it can be said that there is a need for studies revealing the characteristics of their dream schools or the school in which children can be happy by going beyond just describing the perceptions/opinions of children towards schools. Such studies are still limited (see Aktürk Çopur, 2017; Aydoğdu, 2008; Döş, 2013; Ekiz & Gülay, 2018; Güneş, Çakıcı Güneş & Akman, 2016; Özdemir & Akkaya, 2013; Türkmen, 2014). This indicates that more studies are required in Turkish literature to describe the dream schools of children. By referring to and considering the findings obtained as a result of describing the dream schools of children, a basis will be provided for changing, transforming, and designing the ongoing school systems according to children's interests and needs. This way, an important contribution will be made to the literature at both the national and international levels. In addition to these contributions, this study aimed at enabling the children attending primary school and kindergarten classes to describe the characteristics of the school in their dreams. In line with this aim, it was ensured that the participants of this study consisted of the students of three public schools located in regions with different characteristics. It was considered that this study would make an important contribution to the literature in terms of revealing to what extent the dreams of children living in different parts of the same city differed, as well as the width of the age scale of the study group. Another strength of this study was that the children were

requested to make a drawing of their dream school and a face-to-face interview was held with the children about these drawings in addition to the first face-to-face interviews. In addition to providing data richness in terms of the diversity of the data obtained, this also enabled the use of "child-friendly methods" to communicate with children. The perspective of recognizing that children are similar to adults but have different competencies than adults (James, Jenks & Prout, 1998) draws attention to the necessity of using child-friendly methods. Detailed information on the method, data collection process, and data analysis of this study is presented under the "Methodology" section.

METHODOLOGY

This study aimed at revealing the dream school characteristics of children attending kindergarten classes and primary school, and was designed as a case study. Creswell (2013/2016) defines the case study as a qualitative approach where researchers collect in-depth information about one or more current limited systems in real life with multiple sources of information at a certain time. The analysis unit of this study consisted of students at the basic education level. This study was designed as a nested multi-case pattern (Yıldırım & Şimşek, 2013) as the data was collected from three different schools differing socio-economically.

Context and Participants

The study group was determined by purposeful sampling method as "it focused on information-rich situations that would shed light on the research questions" (Patton, 2014, p. 230). The maximum diversity sampling method was used to reflect different perspectives on the desired situation. The aim of providing diversity in this method is not to generalize to the universe, but to try to find similarities or differences between situations. In line with this aim, kindergarten class and primary school students from three schools (Çankaya, Etimesgut, and Altındağ districts of Ankara province, Turkey) differing in socio-economic terms and with different development levels were included in this study. The ages of the participants ranged from 5 to 10. The names of the schools were coded as *Blue, Red, and Green* for ethical reasons. A total of 61 children (19 from Blue school, 16 from Red school, and 26 from Green school) who met the determined criteria participated in this study. Detailed information about the schools was provided below.

Blue School (low level)

The Blue school continues its education activities on a full-time basis with 174 students, 12 teachers, one school principal, one assistant school principal, two cleaning personnel, and one security personnel. It is a school attended by children of families with low socioeconomic levels or irregular income in Altındağ district. The school has a drama hall, library, laboratory, and music class. The open area of the school is around two decares and consists mostly of asphalt ground. There is a container used as a painting workshop in the garden as well as some trees. There are football goals without net and basketball hoops as playground in the school garden. On the garden floor of the three-floored Blue school, there are lines drawn for various plays (such as lines for hopscotch). The school garden is surrounded by high walls and iron bars.

Red School (medium level)

The Red school continues its education activities on a full-time basis with 621 students, 42 teachers, one school principal, one assistant school principal, five temporary personnel, one officer, and one security personnel. It is a school attended by children of families with medium socio-economic levels in the Etimesgut district. The school has 34 classrooms, 8 workshops (visual arts, wood design, mind games, mathematics, science and technology, sports and physical activities, and life skills workshops), an informatics class, a library, a music class, two indoor sports halls, a conference hall, and a cafeteria. The school building is a three-floored building and the school occupies around eight decares of area. This school is a high-level school in terms of its physical

facilities and competencies compared to other schools. There are slide, teeter-totter, and basketball hoops in the school garden. There is also a soft ground playground in this school.

Green School (high level)

The Green school continues its education activities on a full-time basis with 538 students, 31 teachers, one school principal, one assistant school principal, five temporary personnel, and one officer. It is a school attended by the children of families with high socio-economic status in the Çankaya district. The school has two buildings. Grades 1 and 4 study in the first building while grades 2 and 3 in the second building. The first building was constructed in 1992. This building has 10 classrooms, two kindergarten classes, a library, a science and technology laboratory, and a closed area where sports equipment and tools are kept. The second building was constructed in 2000. This building has 6 classrooms, one counseling room, and one multi-purpose conference hall. There are a canteen and a dining hall in the basement of both buildings. The road connecting both school buildings and the school environment is located in a natural wooded grove. The garden area is about five and a half decares. Both buildings have volleyball courts and are surrounded by walls and wires.

Data Collection and Analysis

Before the data collection process, the legal permissions were obtained to conduct this study. After obtaining the institutional permissions, consent forms were obtained from both children and parents as the participants were under the age of 18. The data collection process consisted of two stages. In the first stage, face-to-face interviews were held with the children and, in the second stage, interviews were held again on the pictures drawn by the children. In the face-to-face interviews, semi-structured interview questions were used to determine children's views on their dream school. The researchers conducted a literature review to determine the interview questions and created a basic question in parallel with the aim of this study. Four researchers came together in this regard and agreed on the following research question: *"I want you to imagine a school. How would you like this school to be?".* The reason for choosing this question is that this question serves the aim of the study the most. The questions were shaped and deepened according to the answers obtained from the children. To provide an in-depth understanding, the data obtained from the interviews were supported by the drawings of students about their dream schools. At this stage, the children were asked the following question: *"Can you draw a picture of your dream school?".*

The data were collected in the January and February months of the 2019-2020 academic year. A total of 61 students were interviewed from each grade level of three different schools (preschool, primary school 1st, 2nd, 3rd, and 4th grades). The interviews were held in a silent place of the school (such as an empty classroom, workplace, and hall) and each interview lasted around 15 minutes. Two weeks after the interviews, the same children were gathered together and asked to draw a picture of their dream schools. At this stage, various materials such as colored pencils, paints, and paper used were provided by the researchers. Two students could not participate in the drawing stage of this study as they were not present at the school on that day. Thus, 59 children participated in this dimension. The children were provided about 30 minutes to draw their dream school and the researchers were with the children during this time. Students were allowed to sit alone and away from each other to prevent them from being influenced by each other. After the drawings were completed, each student was interviewed face to face about his/her drawing. The second semi-structured interview phase lasted about 15 minutes for each child. Questions such as *"Can you describe your drawing for me? / What are these? / Who are these people? / What are they doing?"* were used during these interviews. Although the drawings were great tools for children to express their imaginations, the interviews on the drawings were also an important opportunity for them to express their drawings in an explanatory way. Malchiodi (1998/2013) states that asking questions about the drawings will help to get more information from the details of the drawings. The interviews made in both stages of the data collection process were recorded with voice recorders to prevent data loss.

In the analysis of the data process, each researcher wrote down the data obtained from his/her interviews (interview questions and interviews with drawings) without any screening. Then, all the written data was shared with all the other researchers of this study and stored in three different files for three schools. The data from each school were kept together. The researchers analyzed the data they transcribed in two stages. In the first stage, each researcher created themes by bringing together common elements through induction after reading the data they collected thoroughly. In the second stage, the researchers gathered together and exchanged opinions. As a result, the researchers reached a consensus and three themes were created in terms of the elements in the dream school as *socio-emotional environment dreams, physical environment dreams,* and *fantastic-creative dreams*. Then, it was ensured that all researchers had access to the latest analysis and that each researcher could see each other's findings table. Thus, incompatibilities between coders were eliminated. The obtained findings were finalized for three schools and the schools were compared with each other in terms of the number of dreams (frequency) included in the themes. The same method in the analysis process of the responses to the interview questions was followed for the data obtained from the drawing interviews. In addition to this, elements that were included in the drawings of children but not expressed in the interviews were also added to the findings. A drawing representing each of the determined three themes was selected and presented in the Results section. Researchers' fields of expertise also came to the fore as a factor that significantly affected the validity of the study in the data collection and analysis process. In this regard, two of the researchers had teaching experiences at the primary school level, one researcher had expertise in the field of preschool education, and one researcher was studying in the field of visual arts. These factors were important in terms of effective communication with children during the research process and revealing the findings that would serve the purpose of this study during the data analysis stage.

RESULTS

In this study, it was attempted to reveal the feelings and opinions of children about the schools they imagined, and some themes were created as a result of the analysis of the data. In this regard, it was seen that children had fantastic and creative dreams as well as dreams about the socio-emotional and physical environments of schools. Findings regarding these three themes were presented below.

1. Theme: Dreams Regarding Socio-Emotional Environments

The findings of this study showed that there were factors related to the socio-emotional environment in the dream schools of children. It was seen that children included their friends, teachers, school principals, first-degree immediate family members, and people working in different professions in the social environments of their dream schools. Children did not only include people in the social environment of their schools but also imagined other living components such as plants and animals. In addition to this, they also shared the emotional states they felt in their dream schools. Children stated that the people they wanted to include in their dream schools the most were their friends and teachers in their current schools. It was also determined that children included family members such as parents as well as people working in different professions such as scientists, doctors, and pilots in their dream schools. It was determined that the emotion felt by the children the most in their dream schools was "happiness". The children imagined schools with flowers and fruit trees where they could feed animals such as cats, dogs, and rabbits.

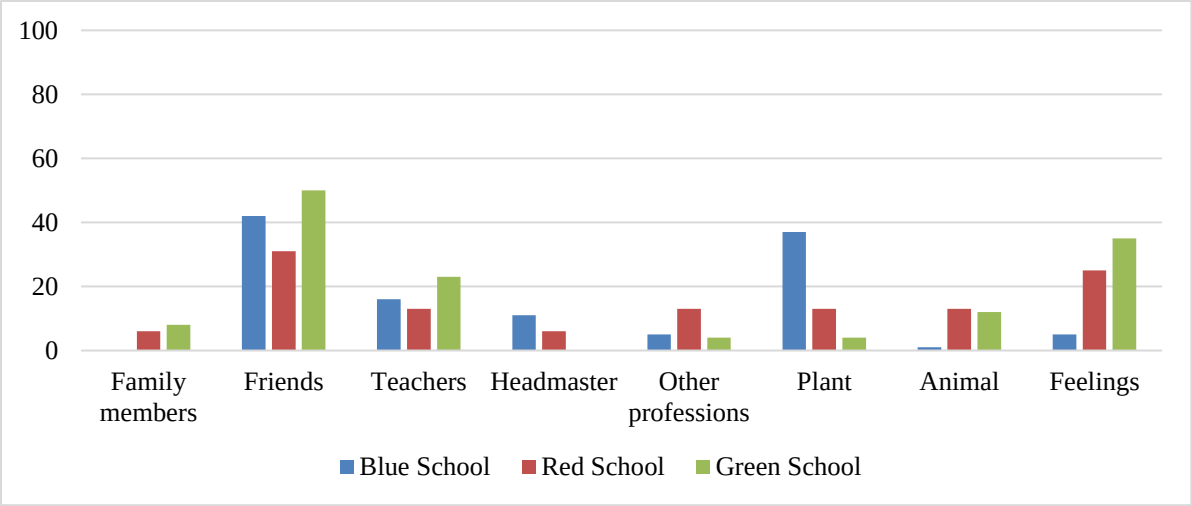


Figure 1 The Dream Findings Regarding the Socio-Emotional Environment

As can be seen in Figure 1, considering the current stakeholders, children in all three schools wanted their friends to be in their dream schools. In the Blue school, 42% of the children participating in this study wanted to see their friends, 16% wanted to see their teachers, and 11% wanted to see their school principals in their dream schools. Similarly, the percentages of the preferences of the children in the Red school were 31%, 13%, and %6 respectively. While the children participating in this study from the Green school did not include the school principal in their dream schools, 50% of the children wanted their current friends and 23% wanted their current teachers to be in their dream schools. A student attending kindergarten class at the Green school wanted her family members and the school principal at her dream school and expressed herself as follows:

"… I wish my father at school was the school principal. My mother, me, my sister, and my friends are at school. There are students from 3-B class."

31% of the children participating in this study from the Blue school used herbal elements such as flowers and fruit trees in their dream schools. However, it was observed that these children either did not included family members, animals, and feelings they felt or they included them with low percentages. On the other hand, children in the Red and Green schools stated that they wanted to see more animals in their dream schools unlike the children in the Blue school. In addition to this, 35% of the children participating in this study from the Green school and 25% of the children from the Red school expressed their feelings in their dream schools with words such as "being happy, liking, having fun, being trouble-free". The drawing made by a student attending the 4th grade at the Green school was presented in Visual 1 as an example drawing. This drawing included findings related to the socio-emotional environment of the school. In the drawing and the interview made after the drawing, it was determined that the child's dream school contained happy friends, animals (cat and birds), a sunny sky, and colorful elements (curtains, door, and roof). The name of the school written on the roof can be translated as "Animal Garden Primary School".

Visual 1 The Drawing Regarding the Socio-Emotional Environment of the School

2.Theme: Dreams Regarding Physical Environments

Analysis of the data demonstrated that children's dreams were concentrated on the physical environment of the schools. Therefore, three sub-themes were created under the physical environment theme as "school areas, sports areas, and materials". The distribution of these findings according to schools was presented in Figure 2.

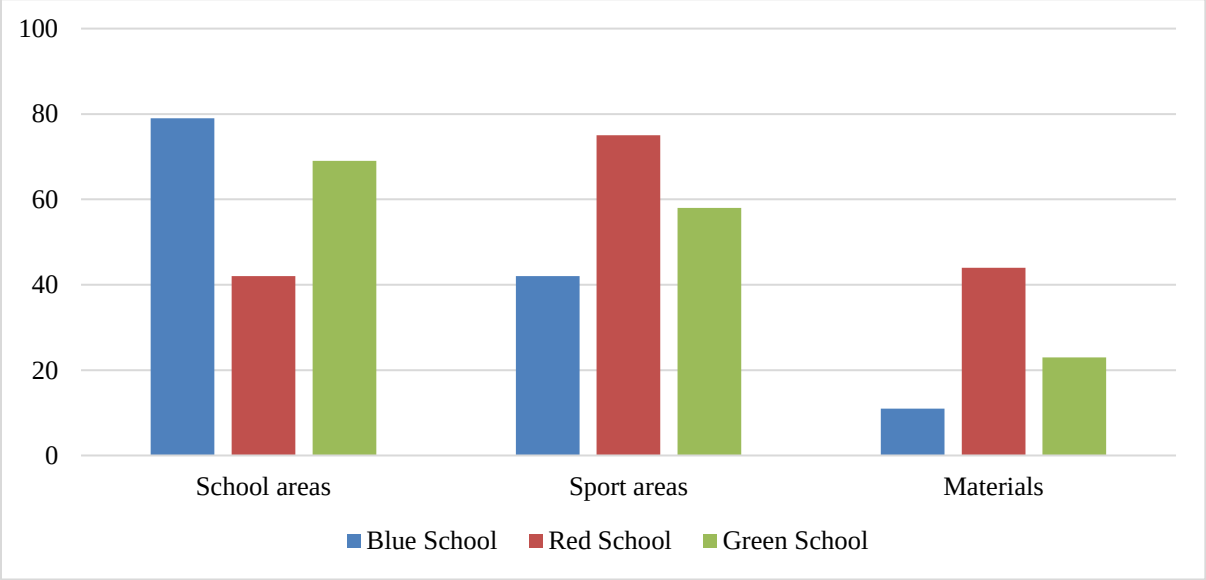


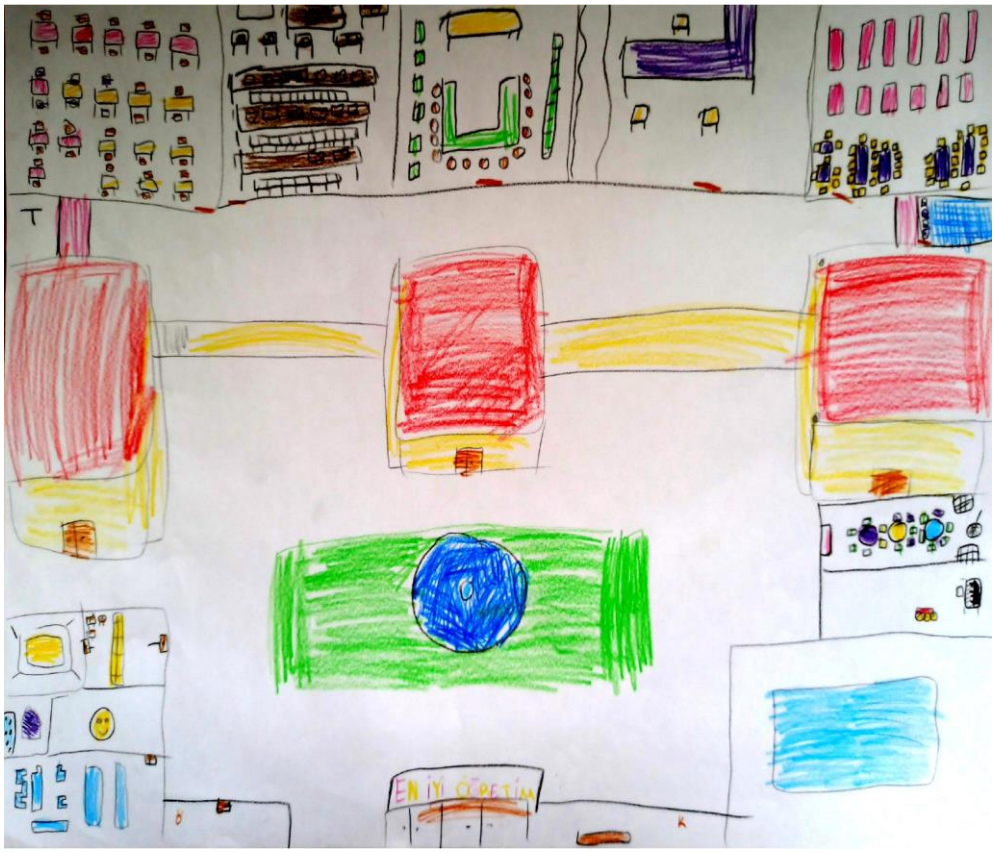
Figure 2 The Dream Findings Regarding the Physical Environment

Figure 2 shows that the dreams of children attending the Blue and Green schools were mostly gathered under the school areas sub-theme while the dreams of children attending the Red school were mostly gathered under the sports areas sub-theme. This similarity determined in the Blue and Green schools also appeared in the order of the sub-themes. In other words, the frequency of the sub-themes

were school areas, sports areas, and materials from high to low respectively for both schools. It was observed that the areas that children wanted to have in their *school areas* were mostly workplaces such as visual arts, music, drama, ceramic, design, wood, and toy class and they imagined a cinema hall, a theater stage, a playground, a museum belonging to the school, a laboratory, an agricultural area, and a dining hall. Another area that children imagined the most was sports areas. In this regard, it was determined that the children imagined sports areas such as football ground, basketball court, handball court, volleyball court, playground, tennis court, gymnasium, swimming pool, ice rink, indoor sports hall and cycling areas although some children imagined only the larger sizes of the existing areas in their schools. Students also imagined *materials* affecting the physical environment. In this regard, it was observed that children imagined individual lockers, toys, smart boards, televisions, recycling bins, puppets, chess games, lego, kitchen tools, bean bag chairs, rocking chairs, and garden toys to be used in the garden. A student attending kindergarten class at the Green school described the materials he wanted to have in his dream school as follows:

"...I wished there were lots of cardboard. Making a model house is a very fun thing. I want all the statues to be gray, with gold ornaments on them. I would like to have a bike and ball..."

Considering the drawings and interviews about these drawings, the drawing made by a female student attending the 3rd grade at the Green school was presented in Visual 2 as an example. This drawing included findings related to the physical environment of the school. In the drawing and the interview made after the drawing, it was determined that her dream school had three buildings connected to each other by corridors. There were an ornamental pool and swimming pool in front of the school building, a music class with a piano, and an indoor basketball court. In the upper left side of the drawing, there were dining halls and classrooms with different layouts (such as U layout, cluster/group layout) drawn side by side.



Visual 2 The Drawing Regarding the Physical Environment of the School

3. Theme: Fantastic and Creative Dreams

When the feelings and opinions of children on their dream schools were examined, it was determined that their imagination was related to unreal (fantastic), unproducible, non-functional or non-existent at schools but likely to be found and unusual/different, and problem-solving practices. The distribution of these findings according to schools was presented in Figure 3.

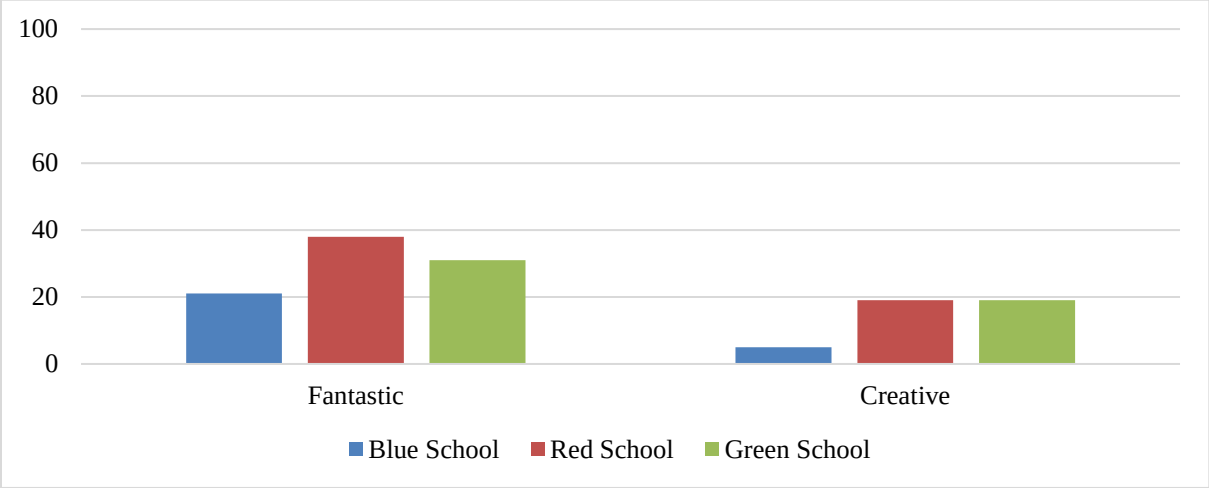


Figure 3 Fantastic and Creative Dream Findings

Figure 3 demonstrated that the fantastic dreams of children were more than their creative dreams. Most of the fantastic findings were about superheroes (like Spiderman) and space. It was seen that the children imagined lecturing robot boards, rockets belonging to the school, spaceship, teleportation device, slides instead of stairs, golf courts, and a school flying with balloons as well as imagining some food and beverages (such as unlimited/never-ending candies and fruit milk). It was determined that shorter lesson times (e.g., 20 minutes), longer breaks, being able to go to school in the evening, having constant music at the school, reading poems, and having party rooms and golf courses were among the creative dreams of the children participating in this study. In Figure 3, it can be seen that the children attending the Blue school expressed fewer dreams about both fantastic and creative dreams than the children attending the Green and Red schools. The students attending the Blue school expressed only a few creative dreams. Considering the Red and Green schools, it was determined that these schools expressed dreams in close proportions (38% and 31%, respectively) in terms of the fantastic dreams while they had equal proportions in terms of the creative dreams (19%). A creative dream was presented here to represent the opinions of the children. A student attending the 4th grade at the Red school described his drawing as follows:

"This school is also open in the evenings. There are football matches in the garden in the evenings. Everyone in the neighborhood comes to watch these matches".

Considering the drawings and interviews about these drawings, the drawing made by a male student attending the 2nd grade at the Red school was presented in Visual 3 as an example. This drawing included findings related to the fantastic dream. In the drawing and the interview made after the drawing, it was determined that there were many fantastic elements in his dream school. As can be seen in the visual, the school is a spaceship that travels to the future and the school has a garden, basketball court, swimming pool, fuel tank, and a bus. Students and teachers wear astronaut suits at the school. During the interview, the child mentioned that this school, which was a spaceship, returned to earth when the lessons were over.

Visual 3 The Drawing Representing the Fantastic Dreams about the School

DISCUSSION AND CONCLUSION

This study aimed at enabling the children attending primary school and kindergarten classes to describe the characteristics of the school in their dreams. The Ministry of National Education Republic of Turkey (2020) defines the school as physical and virtual spaces where educational activities are carried out. In the literature, there are many studies demonstrating that the school is more than a place and that it is important in the lives of students in social and emotional aspects besides its influence on academic success (e.g., Calp, 2020; Cristóvão, Candeias & Verdasca, 2020; Durlak, Weissberg, Dymnicki, Taylor & Schellinger, 2011; Kangas & Cook, 2020; Kostenius, 2011; McNally, Darmody & Quigley, 2019; Nedelcu, 2013; Rahim & Fauziah, 2016; Shala, 2013; Simmons, Graham & Thomas, 2015). Studies revealing the dreams of children attending schools about their schools will demonstrate and guide us what is missing or wrong in the existing schools. Duffy (2006) states that we can learn what children know about the world, what they care about, and how they choose to represent them by examining their imaginary expressions. The schools serve as learning centers for the children. Therefore, children's expressing their feelings and opinions about their schools may affect their sense of belonging and make them feel cared for.

The findings obtained as a result of the interviews with the children and the school drawings of the children were included under three themes (see Findings). The most basic finding of this study is that the schools need to be organized in a way to meet the social, emotional, and entertainment needs of students. In a study conducted by Piispanen (2008) it was stated that students' opinions on their learning environments (school, classroom, etc.) differ from those of teachers and parents. However, with this study, it was seen that students, like parents and teachers, cared about the social and psychological value of the school. As Kershner and Pointon (2000) point out, children can explain their perceptions of the classroom environment with social concepts (getting along with each other), emotional concepts (being safe and confident), their tasks (needing to concentrate), or learning (remembering, understanding, and developing ideas). For example, when the dream schools of children are examined in terms of the socio-emotional environment (see Fig. 1), it can be seen that the most desired figure in all three schools is friends. This finding shows that the school is not only a learning-teaching center but also a socialization center. This also supports the socio-cultural perspective arguing that learning takes place in interaction. The finding that they include not only their friends but also many other individuals (family members, teachers, principals, doctors, security

personnel, etc.), plants, and animals in their dreams support the socialization of children in schools. According to Friesen (2010), animal-supported programs are becoming increasingly popular in schools and therapeutic environments. Many studies (Herzog, 2011; Macauley & Gutierrez, 2004; Walsh, 2009) indicate that such environments will be a socially and emotionally supportive environment for children.

In this study, it was a remarkable finding that none of the children in the Blue School (socioeconomically low level) imagined family members in their dream schools. The reasons for this can be considered as the characteristics such as the economic situation and education level of the families. Sarpkaya (2007) states that various characteristics such as family, social values, and opportunities influence student behavior and are important components of school discipline. Bourdieu and Passeron (1970/2015) state that the source of success-failure, preferences, and positive-negative behaviors in education is mostly family. Therefore, it can be said that the family, which has such an important position, is not included in the dream schools of the children attending the Blue school and that the children consider the situation about their families as a disadvantage and do not include this in their dreams. Similarly, it was determined that children attending the Blue school either did not include the animals and their emotions or they included them rarely. Findings from the other two schools demonstrated that there were situations that created positive emotions such as happiness, enjoyment, fun, and trouble-freeness about the socio-emotional environment of the dream schools. In a study conducted by Calp (2020) the children described a happy and peaceful school as “a fun and quiet place, where ideas are respected, where there is no fighting, where there are rules, where plays are allowed, where teachers are not scary, where responsibilities are fulfilled, and a decent and respected place”. In this regard, it can be concluded that the findings of these studies are in parallel with each other. Another interesting finding was determined in the Green school, which had many physical and financial resources. It was also determined that the children attending the Blue and Red schools included the school principal in their drawings while the children attending the Green school did not include the school principal in their drawings. In a study conducted by Sezer and Can (2020) it was determined that the students attached importance to the learning environment, school environment, and physical equipment for a “happy school”. The absence of school administrators among these priorities was in parallel with the findings of this study.

The findings of this study demonstrated that physical environments also played an important role in the dream schools of children. Studies in the literature (e.g., Flutter, 2006; Kangas, 2010; Martin & Murtagh, 2015; Piispanen, 2008; Ridgers et al., 2012) highlighted the importance of the physical spaces of the school for children’s physical activity needs such as play and sports. It can be said that children make their dreams based on their current needs and experiences. Saul (2001) calls this as *the normalization of imagination*. In other words, the things we need in our surroundings, in our streets, and in our schools enable us to enrich our imagination in balance with our logic and develop visions about what to be imagined and what can be. The findings of this study demonstrated that children highlighted the shortcomings of their existing order (e.g., a larger library, more playgrounds) or areas, people, and living creatures (such as art workshops, swimming pools, family members, plants) they wanted to have in their schools. The most important evidence supporting this theory was the current physical conditions of schools (see Context and Participants section). For example, it was determined that the children attending the Red school imagined *sports areas* the most. This could be related to the fact that the Red school had a small garden and the sports areas in the school garden were insufficient. Similarly, the children attending the Blue and Green schools mostly imagined *school areas*. This could result from the fact that the Blue school currently had very insufficient facilities and the two school buildings of the Green school were not close to each other (see Context and participants section). In addition to this, considering the items emerging as the sub-themes, it was seen that the children attending the Red school imagined materials the most. Currently, there are various design workshops in this school. It was considered that the children attending this school imagined more about materials than other children due to the material needs in their schools. In addition to these, one of the findings supporting this was that children imagined *larger areas* than the existing ones in their schools.

It was also determined that the dreams of the participants about the socio-emotional and physical environment of the school were more than their fantastic and creative dreams. Bland (2006, 2011, 2012) classifies imagination under four types (fantasy, creative, critical, and emphatic imagination) and this classification has a significant place in the literature. In this regard, only two of the four imagination types (fantasy and creative) were found in this study. Considering the findings of this study, very few data were obtained on creative imagination and it was determined that the children attending the Blue school did not dream creatively and they had very few dreams about fantastic imagination compared to other schools (see Figure 3). This supports the proposition that dreams are built on the basis of current needs and experiences (see Saul, 2001). It can be argued that this finding is significant evidence of inequality between schools that manifests itself even in children's dreams. It was mentioned that the creative dreams of the children aimed at solving the existing problems in the school (see Data collection and analysis section). In this regard, it can be concluded that children regarded lesson and break times, the school's not being open in the evenings, the lack of sufficient space for artistic activities (such as music, poetry), and the school's not meeting their entertainment and sport's needs (party rooms, golf courses) as problems.

Considering the findings of this study, it can be concluded that the dreams of children about their schools were within the framework of their experiences in the current school conditions. This study demonstrated that children needed a wide variety of spaces, workshops, and materials for both physical activities and their academic development in their dream schools regardless of their socio-economic conditions. In addition to this, the children described their schools as places where they socialized with their friends and other individuals. The children participating in this study suggested that schools should be a fun and happy environment, have an environmentally friendly environment with plants and animals, and sometimes include fantastic or creative elements. This study revealed that children had opinions about what characteristics schools should have in line with their needs and creativity, and emphasized the need for these ideas to be carefully and meticulously considered by the other stakeholders of the school.

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International Journal of Progressive Education, Volume 18 Number 4, 2022

Views of Preservice Social Studies Teachers regarding the Use of Virtual Tours during the Pandemic

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Abstract

This research aims to determine the views of preservice social studies teachers regarding the use of virtual tours during the pandemic period. The study was carried out with the phenomenology design, one of the qualitative research designs. 20 preservice Social Studies teachers studying at Kutahya Dumlupinar University participated in the study in the 2021-2022 academic year. The criterion sampling method, one of the purposeful sampling types, was used to determine the research group. The criteria were being a preservice social studies teacher and participating in virtual tour application training. The research data were collected with a semi-structured interview form developed by the researchers and analysed with the content analysis technique. As a result of the data analysis, it was seen that the views of the preservice teachers about the virtual tour application were primarily positive. The data obtained from the interviews were divided into six themes: informative, persistent and embodied, attractive and entertaining, practical and easy, economic and providing equal opportunity, and negative opinions. The informative theme is divided into two sub-themes as giving preliminary information and explanation.

Keywords: Pandemic, Virtual Tour, Virtual Museum, Social Studies.

DOI: 10.29329/ijpe.2022.459.8

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INTRODUCTION

Technology is applying and using scientific knowledge applied in a particular field to meet human needs effectively (Ogut, 2003). Technology has been evaluated as an action that has increased its impact by changing on a local and global scale since the existence of human beings. Technology cannot be thought of independently of the society in which it is located or produced (Kara, 2017). Since societies are in constant motion, the concept of technology has gained a different meaning in every age (Apali, 2016). According to Tonta and Küçük (2005), the society people live in is an information society. The transition from the industrial society, which is the last level, to the information society is full of technological changes (Kocacik, 2003). This change has led to the differentiation of the perception of technology today, and this concept to be perceived as products containing high-quality scientific knowledge and technique (Aksoy, 2005). With its increasing power, technology has been effective in many fields as well as in the field of education and has paved the way for the emergence of the educational technology discipline (Erden & Pehlivan, 2020). Education plays a significant role in systematically transferring knowledge to new generations (Parlar, 2012). The way to benefit from education in accordance with today's conditions is through educational technology. Any material that facilitates the transfer of knowledge is called educational technology (Dere & Ates, 2019). Educational technologies are diversifying day by day in parallel with the developments in the field of technology. Along with this diversity in educational technologies, educational models are affected, and a revolutionary development and change are experienced in education (Özcıftcı & Cakir, 2015). One of the changes made is the re-preparation of the programs based on the constructivist approach as of 2004 (Akkus, 2004). One of the renewed programs is the Social Studies Curriculum. To raise good and responsible citizens at the primary and secondary school level, importance is given to the integrity of science and technology in the social studies course, which utilises various disciplines (Erden, 1999; Tay, 2017). It is possible to see the reflections of this integrity in the 2005 and 2018 Social Studies Curriculum (MEB, 2015; MEB, 2018). In both programs, the learning area of "Science, Technology and Society" is included, and the students' conscious and effective use of information and communication technologies is the particular purpose of the course (MEB, 2018; Tay, 2017). Therefore, teachers are expected to know information and communication technologies (ICT) and reflect this in their courses. The use of technology in the social studies course positively affects the students' attitude, interest, attention and motivation towards the school subjects and positively impacts their success in the course (Akgun & Koru-Yucekaya, 2015; Dere & Ates, 2019; Inel & Cetin, 2017; Kazu & Yesilyut, 2008; Yaylak & Inan, 2018; Yesiltas, 2014; Yildirim & Tahiroglu, 2012). Benefiting from educational technologies in the classroom and extracurricular environments positively affect students.

Virtual tours and virtual museum applications allow students to gain different experiences by eliminating the time-space boundary in extracurricular settings (Derman, 2012). While virtual museums are called museum tours in the most general sense, virtual tours are defined as creating artificial travel environments by transferring real places to electronic media (Ozen, 2006; Tastan, 2017; Yildirim & Tahiroglu, 2012). Virtual tours and museum applications reflect the characteristics and works of different geographies and the socio-cultural structures of individuals (Erbay, 2001). These applications, which provide information about societies' history, present and future, are preferred more than in the past due to their ease of use (Aktas, 2017). According to Baillargeon (2008), many collections in the virtual environment have been brought together with many people through virtual museum applications. Therefore, people have had the opportunity to observe and have various experiences. In the virtual tour application from virtual museums, visitors can feel inside the space by using panoramic photographs that help obtain three-dimensional images (Tay, 2020). Virtual tours can be held in virtual museums as well as in various environments that are considered to be visited (Surme & Atilgan, 2020). For this reason, it is frequently used in different fields such as tourism, apart from education (Aksoy & Bas, 2020). Disadvantaged situations such as time, money, permission and planning are commonly encountered in museum education, which is tried to be carried out on-site before the virtual tour and virtual museum applications (Keles, 2003). In particular, since 2020, the risks of disease transmission, which started with the Covid-19 pandemic, have been added to these disadvantageous situations. Since forming large groups in local museum education, visits will

increase the probability of students catching the disease, families and the administration are hesitant at the permission stage. It is known that virtual tours and virtual museum applications, which are equivalents of on-site museology, can be used to eliminate this and many similar disadvantageous situations (Sahan, 2005). When the studies in the related literature are examined, it is seen that there are various studies on the use of virtual tour application in education (Altinbay & Gumus, 2020; Iskender, 2019; Koca & Dasdemir, 2018; Surme & Atilgan, 2020; Tay, 2020; Teker & Ozer, 2016). Apart from these studies, there are also various studies on the use of virtual tours and virtual museum applications during the pandemic period (Akyol, 2020; Ekinci, 2021; Halac & Doruk, 2021; Ortac, 2021). When the studies were evaluated in general, it was seen that especially the studies during the covid-19 pandemic period were primarily studies in the literature review type that evaluated the current situation. Knowing the experiences and perceptions of preservice teachers regarding the use of virtual tour applications during the pandemic period is extremely important in terms of shaping the future of the application and ensuring its integration into the lessons. This research aims to determine the views and experiences of social studies teachers about the virtual tour application used during the Covid-19 pandemic period.

METHOD

This part further discusses the research design, study group, data collection tool, data collection and analysis

Research Design

The phenomenological research design, one of the qualitative research methods, was used in the study. Phenomenology is a type of research that includes an in-depth examination of phenomena and events that we have encountered and experienced before (Yildirim & Simsek, 2011). According to Creswell (2007), phenomenological studies are divided into two as interpretive (hermeneutic) and descriptive (empirical). In descriptive phenomenology studies, interpretation is given less place and more attempts to define what experiences are. Understanding real-life experiences are essential in interpretive phenomenology studies (Aydin, 2015). Since the research was based on interpreting the experiences of preservice social studies teachers about the virtual tour application, this research was conducted with an interpretive phenomenology design.

Study Group

The study group consists of 20 preservice social studies teachers studying at Dumlupinar University, Faculty of Education, Department of Social Studies Education. Criterion sampling, one of the purposeful sampling methods, was used to determine the study group. According to Buyukozturk (2020), in the criterion sample, the subjects of the sample may consist of people, objects, events and situations with specific characteristics. In this case, it is necessary to work with people who meet the criteria determined in selecting the sample. The criteria determined within the scope of the research were determined as being a preservice social studies teacher and having experienced the virtual tour application. The reason why preservice social studies teachers were chosen as the study group in the research is that there are many contents with the virtual tour and virtual museum applications in the social studies course (Aladag, Akkaya & Sensoz, 2014) and a new course was added under the name of Art and Museum Education in 2018 Social Studies Education Undergraduate Programs (Tonga, 2020). The data about the preservice teachers participating in the research are given as in Table 1

Table 1. Demographic characteristics of the study group

Information about the Participants		f	%
Gender	Female	14	70
	Male	6	30
Age	19 and under	4	20
	20-22	10	50
	23-25	4	20
	26 and above	2	10
Virtual Tour Application	I know	13	65
	I do not know	7	35
Experience in using Virtual Tour Application	Yes	12	60
	No	8	40

When Table 1 examined is, 14 of the preservice teachers participating in the research are female, and 6 are male. Ages range from 19 years and younger to 26 years and older. 13 of the preservice teachers stated that they had information about the virtual tour before the training, and 12 of them stated that they had used the virtual tour application before.

Data Collection Tools

Research data were collected with an open-ended interview form developed by the researchers. Before the interview form was prepared, the relevant literature was reviewed, and the interview form was finalised in line with the views of two field experts. Due to the pandemic, face-to-face meetings could not be held with preservice teachers, as the education was carried out through remote education in the fall semester of 2021-2022. Before the interview with the preservice teachers, a virtual tour event lasting approximately 50 minutes was held by the researchers introducing the Kutahya Castle, the Ulu Mosque, and the Donenler Mosque. Before the event, the participants were given theoretical information about the virtual tour application and taught how to use the application. The questions prepared after the activities were asked individually on Google Meet to 20 preservice social studies teachers participating in the application on different days, and the interviews varied between 15-30 minutes.

Data Collection and Analysis

Research data were analysed by the content analysis method. The content analysis includes an in-depth examination of previously unspecified themes and dimensions (Yildirim & Simsek, 2016). Accordingly, after the interviews with the participants were made over Google Meet, the answers were written down and carefully read and interpreted by the researchers. The answers given by the participants were first separated into codes, and sub-themes and themes were reached from the codes, and tables were created using various visuals. To ensure the validity and reliability of the research, credibility, transferability and consistency strategies were used. Credibility and transferability are considered some of the strategies used to ensure validity and consistency to ensure reliability (Lincoln & Guba, 1985). The research findings were shown to the participants, and their confirmation was obtained to increase the credibility of the research. Some of the participants' statements were supported with direct quotations, and details were included to increase transferability and consistency.

Ethical Aspect of Research

In this study, the contribution level of the researchers is equal. There is no conflict of interest between the authors of the article. Ethics committee approval was obtained for the article (Decision dated 30.11.2021 (E.60623)) research and publication ethics were complied with.

FINDINGS

The findings obtained for the question of "What are the views of preservice social studies teachers regarding Virtual Tour applications during the pandemic process?" related to the research

problem were divided into themes and sub-themes as a result of the content analysis and are shown in Figure 1.

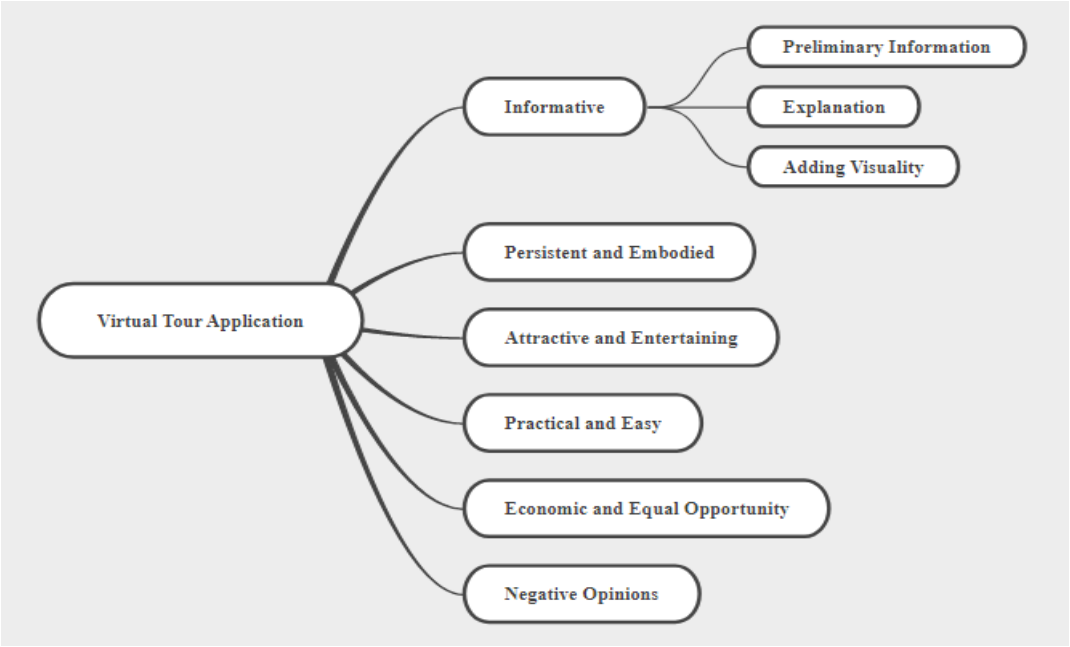

Figure 1. Theme and sub-themes regarding the virtual tour application

When Figure 1 is examined, the participants' views about the virtual tour application are gathered under six themes. Accordingly, the informative theme is divided into preliminary information and explanation sub-themes. Other themes are persistent and embodied attractive and entertaining, practical and easy, economic, and equal opportunity. Views that were not positive regarding the virtual tour application were discussed under the theme of negative opinions.

Findings Regarding the Informative Theme

As a result of the analysis of the interviews with the preservice teachers participating in the research, the informative theme was divided into two sub-themes as giving preliminary information and explanation. The codes created for these sub-themes are shown in Table 2.

Table 2. Sub-theme and code table regarding the informative theme

Theme	Subtheme	Code	Participant
Informative	Preliminary Information	Pre-discovery of the destinations and places	P3, P10
	Explanation	Historical and visual information about the city visited through virtual tour	P1, P4, P9, P15, P17, P20

When Table 2 is examined, it is seen that the informative theme is divided into two sub-themes, namely, giving preliminary information and explanation. Preservice social studies teachers, who tried to get to know Kütahya, the city they studied, using the virtual tour application, stated that it was informative. Before the application, the Kütahya castle, the great mosque and the returning mosque were introduced by the researchers using the virtual tour application and information was given. After the application was finished, preservice teachers were guided to use it and explained how to use it. After the process was completed, the preservice teachers' views about the virtual tour application were received. Direct quotations regarding the sub-theme of giving preliminary information from the participants' opinions are shown below.

We only took face-to-face lessons for one semester in Kütahya. Since the second semester of the first year, we have been taking classes through distance education. Since we

stayed for a short time, we did not have the opportunity to visit most places. In this respect, it created preliminary information. I was satisfied with the tour. When we started face-to-face training, I wanted to visit these places that I saw virtually (P3).

I also use the virtual tour application when appointed as a teacher. Because I want to give healthier information to my students. Especially before I travel, if I'm going to have a virtual tour application, I use it and try to get preliminary information. I found this app informative in every way (P10).

When the quotations given above are examined, preservice teachers stated that they would use the virtual tour application to obtain preliminary information about the places and environments they plan to go to. Thus, the participants, who thought they could get more detailed information, stated that they would benefit from this application before their school trips. Most of the participants said that this application could be explanatory about the places they have not been to or have not been to before. P1, P15 and P17 stated that we could explore the places we want to see but cannot go to with this application, and we can explain to our students with this application, while P9 and P20 stated as follows.

"*I think this application is more appropriate for interdisciplinary courses such as social studies. Because my field covers many fields, including history and geography. With this application, I can explain many things using various visuals* (P9)."

"I especially use this application to explain and explain historical subjects with various visuals (P20)*".*

Unlike the other participants, P1 stated that with the virtual tour application, s/he was informed about the virtual tour application and the city s/he was studying.

Findings Regarding Persistent and Embodied Theme

When the data obtained from interviews with preservice teachers were analysed, another theme reached was persistent and embodied. The codes created for this theme are shown in Table 3.

Table 3. Code table for persistent and embodied theme

Theme	Code	Participant
Persistent and Embodied	Embodied information	P6, P12
	feeling oneself in the place	P10
	Increasing retention	P8, P16, P17

When Table 3 is examined, it is seen that the codes created under the persistent and embodied theme are divided into three as the embodiment of knowledge, feeling oneself in the place and increasing retention. The direct statements about the embodiment of knowledge about the preservice teachers are as follows.

"The virtual tour application is very suitable for the content of certain courses. I think that it would be good for students to embody what they learned in courses such as geography and history (P6)*."*

"Students can understand better with the visuals used in the virtual tour application. Abstract issues can become somewhat concrete (P12)*."*

It is understood from the statements of the preservice teachers that the virtual tour application can be used to embody the social studies lesson subjects since it contains various visuals. P10 said that the virtual tour application creates a feeling of being in a natural environment, *"As it provides us with*

360-degree tours, we can feel ourselves as if we are in that environment. It offers us the opportunity to recognise the place and objects there. Even if we are not there, even if we do not go, we feel like we are there". Examples of direct quotations reflecting the views of preservice teachers who stated that the virtual tour application increased memorability in addition to its embodied feature are given below.

"While I am teaching social studies, when I come across a country or city, I tell the students not from the book but the virtual tour, if available. Thus, I can increase memorability (P8)."

"The students of today's era are learning with technology. With the Covid-19 pandemic, our dependence on technology has increased even more. For this reason, I think that students' having various experiences by using technology makes the subject matter more beautiful and permanent (P16)."

"I believe that the visual resources I will use while explaining the subject or a place will leave a more lasting effect on students. The fact that the virtual tour application is based on visuals in the real environment will provide better and permanent learning of the subject (P17)."

Preservice teachers describe the social studies course as an abstract and low-memorability course in terms of its structure. For this reason, enriching it in terms of visuality and bringing it closer to life embody the lesson and increase permanence about it.

Findings Regarding the Attractive and Entertaining Theme

When the data obtained as a result of the interviews were analysed, another theme reached was attractive and entertaining. The codes created for this theme are given in Table 4.

Table 4. Code table for the attractive and entertaining theme

Theme	Code	Participant
Attractive and Entertaining	Entertaining	P10, P11, P19
	Attractive	P7, P13

Themes created under the attractive and entertaining theme are attractive and entertaining. Direct quotes from entertaining coded teacher opinions are as follows.

"I used the virtual tour application for the first time. I really enjoyed feeling like as if in a real environment. I had a lot of fun both watching the virtual tour application and using it myself. It can also be fun when used in lessons (P10)."

"It was an entertaining activity to see the places we visited during the orientation trip organised by our school in Kütahya, even partially. When we started school, I had the opportunity to visit the places described. Seeing it in the virtual environment helped me remember the places I went (P11)."

"Although I don't think it will replace the real thing, it's a pretty fun app (P19)."

When the opinions of the preservice teachers are examined, it is seen that those who use the virtual tour application for the first time find the application more enjoyable. In addition, it is considered that the application can be remarkable for students with its feature of reflecting reality. *"I want to address the interests of students in my lessons. Technology supported applications such as virtual tour applications can attract students' attention and make them more interested in the lesson,"* P7 stated. According to P7, virtual tour applications can be considered an alternative for student learning due to their remarkable feature. P13, one of the students, expressed his opinion about the virtual tour application, *"This activity was very remarkable with the visuals provided and its strong presentation style. I have not been to the places described before, so I was curious. When face-to-face training starts, I would like to go there".*

Findings Regarding the Practical and Easy Theme

Another of the themes obtained as a result of the interviews with the participants was gathered under the theme of Practical and Easy. The codes created for this theme are shown in Table 5.

Table 5. Code table for practical and easy theme

Theme	Code	Participant
Practical and Easy	Not requiring any movement effort	P5
	Participating by sitting at home	P16
	Easy	P14
	Practical	P2, P18

According to Table 5, the codes determined under the practical and easy theme do not require any movement effort, participate by sitting at home, and are easy and practical. The direct statements regarding the preservice teachers who stated that they could use the virtual tour application by sitting at home without requiring any movement effort are as follows:

"I think it will be easy, especially during the covid period. Instant access without any movement effort is very practical in terms of the convenience of the application (P5)."

"During the pandemic, when there was a curfew, and we spent most of our day at home, we used the virtual tour application comfortably by sitting at home. We can benefit from this application not only for Kütahya but also for the promotion of many cities and historical buildings (P16)."

The fact that the application was planned during the pandemic period and the students spent only one period with face-to-face education increased the interest in the event. Preservice teachers stated that they easily use the virtual tour application without leaving the house, and they talked about the practicality of using this application. P14 noted that *"I think it is an application that will once again reveal the importance of individual isolation during the pandemic process that has affected the world. I am new to this application. We were able to examine any place we wanted to see in Kütahya without being there personally as if we were there."* Preservice teachers' views on the practicality of the application are as follows:

"The virtual tour application is one of the easiest applications we can access to get to know and learn about cities during the pandemic process (P2)."

"I learned about the aspects of Kütahya Castle that I did not know. We missed Kütahya because of the virus; it was a nice trip. It is very practical to use, and I plan to use this application from now on (P18)."

When the expressions of the preservice teachers are examined, it is seen that the virtual tour application is perceived as practical and easy. Due to these advantages, it is estimated that preservice teachers who are informed about the virtual tour application will also benefit from the applications in their professional lives.

Findings regarding the theme of economic and equal opportunity

The opinions of preservice teachers about the virtual tour application of social studies were collected under the theme of providing economic and equal opportunity. The codes collected under this theme are as follows.

Table 6. Code table for the theme of economic and equal opportunity

Theme	Code	Participant
Economic and equal opportunity	Cannot find time	P5, P15
	Financial Impossibility	P2, P19
	Equal benefit for all	P18

Examples of direct quotations regarding the preservice teachers' evaluation of the virtual tour application as an economic and equal opportunity are as follows.

"With the virtual tour application, you can see the places you want to go or see without wasting time. This application, which is one of the benefits of technology, can be very useful when planning our daily work (P5)*."*

"It's a nice app for the community. Those who do not have the time and financial means to travel can easily benefit from this application (P15)*."*

"The possibilities of the place where I started my job may not be excellent. When I want to travel, I may not be able to. In this context, while explaining cities to my students, I can make them benefit by using this application (P2)*."*

"This application can be used especially for places abroad that you want to go but cannot go to (P19)*."*

Preservice teachers evaluated the virtual tour application positively since it is an application that can be accessed remotely and does not require time or money. In addition, it may not be convenient in terms of time and economy to go to a place, especially to organise collective events within the scope of the school. The number of students who want to participate but cannot participate in the activities held for economic reasons is not tiny. P18 expressed this situation with the words, *"After being appointed as a teacher, I use this application because the class can benefit from this activity equally"*. For such reasons, the use of such applications among students can be supported more.

Negative Opinions

When the preservice teachers' opinions regarding the use of the virtual tour application are examined, it is seen that the positive thoughts are in the majority. However, some preservice teachers stated that virtual applications would not be as practical as on-site applications in the interviews. These opinions of the preservice teachers were gathered under the theme of negative opinions. The codes created for this theme are given in Table 7.

Table 7. Negative opinions

Theme	Code	Participants
Negative Opinions	Confusing and dizzying	P17
	Not as effective as the real one	P7, P19

Examples of direct quotations from the evaluations in which preservice teachers expressed negative opinions about the virtual tour application are below.

"There is a movement throughout the application. It's hard to focus. This situation is confusing and dizzying for me. I can say that I do not find it very effective (P17)*."*

"I did not find the application effective enough to replace the real thing. It may be an alternative for those who cannot go but seeing it on the spot is different (P7)*."*

"Although I don't think it will replace the real thing, it's a pretty fun app (P19)*."*

Unlike other teachers, although P19 stated that she could not replace the actual practice, she evaluated it as fun. For this reason, this expression of P19 is given both under the theme of remarkable and entertaining and under the theme of negative opinions since the expression has both positive and negative features.

DISCUSSION, RESULTS AND RECOMMENDATIONS

In this research, preservice social studies teachers' views on virtual tour applications during the pandemic period were examined, and it was determined that preservice teachers generally had a positive opinion. Due to the pandemic, many countries, including Turkey, have restricted physical access to museums and historical sites to reduce the risk of transmission. Therefore, visits to these environments through applications such as virtual tours and museums have increased during the pandemic period (Halac & Doruk, 2021). According to Tepecik (2007), virtual museums are among the programs that can be used for life due to their advantages in distance education.

The research was carried out with students residing in provinces other than Kütahya, who participated in face-to-face education for only one semester and received distance education for three semesters. Therefore, it is thought that the participants do not have enough knowledge about the historical and cultural specialities of the city they are studying. According to the research results, the students stated that they could have more information about the features of the city they studied with the virtual tour application. When the participants' opinions about the virtual tour application are evaluated in general, it is seen that they are positive. The relevant literature was reviewed, and similarly, positive results were obtained in various studies conducted with the virtual museum and virtual tour application (Aktas, Yilmaz & Ibrahimoglu, 2021; Ilhan, Tokmak & Aktas, 2021; Surme & Atilgan, 2020; Yildirim & Tahiroglu, 2012). The codes obtained from interviews with preservice teachers were divided into themes under the headings of informative, permanent and embodied attractive and entertaining, practical and easy, economic and equal opportunity, and negative opinions. The informative theme is divided into two sub-themes as preliminary information and explanation. Under the informative theme, the teachers described the virtual tour application as preliminary to explain the characteristics of a city or feature or to get to know the places that are planned to be visited and seen beforehand. This finding of the research is in parallel with the fact that Aksoy and Bas (2020) see the virtual tour application as a tool that can be used to promote the city. According to Halac and Izci (2020), similarly, with the virtual tour application, the promotion of the cities can be reached, and the desired data can be accessed without going to the cities.

When the data obtained with the virtual tour application is analysed, another theme obtained is the embodied and permanent theme. Under this theme, the preservice teachers stated that the virtual tour application could embody the information due to the visuals it contained, and thus the permanence would increase. Virtual tour application makes visual objects three-dimensional rather than two-dimensional (Koca & Dasdemir, 2018). Information technologies, which make the lesson three-dimensional, enable the class to be taught in a more embodied and realistic way (Karaman & Akbaba, 2020). The embodiment of abstract subjects in the social studies course makes the subject understandable and straightforward and increases memorability (Soylu & Memisoglu, 2019).

Another theme reached regarding the virtual tour application was gathered under the title of attractive and entertaining. The virtual tour is a three-dimensional simulation model created using virtual reality (Bayraktar & Kaleli, 2007). Preservice teachers stated that they had a lot of fun while using the virtual tour application and that it was entertaining for them to feel like they were in a natural environment. Similarly, in his study, Ulusoy (2010) states that the participants evaluated the virtual museum education process as fun.

The participants consider the virtual tour application practical and easy because it can be used online, is free of charge, and is easy to access. In the 21st century, the speed, continuity and

practicality of accessing information are as important as access to information. For this reason, the internet and mobile technologies should be used more (Uyar & Karakuyu, 2019). Virtual trips to any part of the world in the classroom environment provide an excellent convenience for students in the speed of accessing information (Varol, Yigit, & Ulvi, 2021).

Attending local museum education or tours requires effort, time and cost. Today, the risks of transmission of the disease experienced with the Covid-19 pandemic have been added to these difficulties. For all these reasons, virtual museum and virtual tour applications have gained greater importance compared to the past, and their use has increased compared to the past (Aditia & Fadilla, 2020; Akyol, 2020; Halac & Doruk, 2021). At the end of the interviews with preservice teachers, the virtual tour application was evaluated as one of the applications that can be preferred in cases of time constraint and financial impossibility. In addition, the equal opportunity for all students to benefit from this service was seen as an equal opportunity and was determined as one of the reasons for preference. Peker (2020) has similarly concluded in his study that virtual museums provide equality of opportunity in education, albeit partially. Since the virtual museum and virtual tours have the same function, it is thought that both applications may contribute to ensuring equality of opportunity in education.

At the end of the interviews about the virtual tour application, it was seen that some preservice teachers found the application confusing and distracting. At the same time, some preservice teachers did not find the virtual tour application as practical as the field trips. Similarly, in Ortac's (2021) study, some participants did not find the application as effective as field trips.

- According to the research results, nearly half of the participants stated that they did not know about the virtual tour application and did not use it. There are many contents in the social studies course with the virtual tour and virtual museum applications. Therefore, preservice social studies teachers, who are the course practitioners, should be more informed about virtual tours and museum applications.

- Applications that can be accessed via remote access are an alternative for individuals, especially in extraordinary times such as the pandemic period. Therefore, the number of places accessible through virtual tours and museum applications should be increased.

- This research was carried out with a qualitative research design. Future studies can be carried out with different variables and research designs. Research can be presented with a more holistic and broad perspective.

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International Journal of Progressive Education, Volume 18 Number 4, 2022

Parents' Metaphors About Outdoor Play*

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Abstract

The aim of this study is to examine the parents' perceptions about outdoor play through metaphors. The study is conducted with 107 parents, 96 mothers and 11 fathers, with children between 0-72 months. The data has been collected via an online questionnaire. Parents completed the prompt "Playing outside is like… Because ..." to indicate their conceptualization of outdoor play. In addition, interviews were conducted to obtain more in-depth data about parent's views about outdoor play. Content analysis technique is used in the evaluation of the data obtained in the research and eight conceptual categories were identified. The metaphors developed about outdoor play are, in order of frequency, freedom, healing, need, fun, instruction, happiness, peace, and exploration. As a result, it has been found that parents of preschoolers have positive perceptions towards outdoor play. Also, parents are aware of the benefit of outdoor play for the child, perceive it positively, but limit their children's outdoor play opportunities, or try to structure it especially because of their concerns about security and health. Thus, it will be possible for children to benefit from outdoor play at the maximum level by eliminating the difficulties faced by parents and increasing their awareness about outdoor play.

Keywords: Early Childhood; Play; Outdoor Play; Parents; Metaphor.

DOI: 10.29329/ijpe.2022.459.9

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* This study was derived by the oral paper which was presented in the International Congress of Early Childhood Outdoor Practices (24- 25 March2021, Sakarya). The congress is organized as the multiplier event of the Outdoor-oriented Practices in Early Childhood Education Project which is co-financed by the Erasmus +.

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INTRODUCTION

Being outdoors is an interactive learning and play environment, in which children discover the world directly, experience gross motor movements, and contact with natural elements. Outdoor provides an environment for interactive learning and play, in which children discover the world directly, experience gross motor movements, and are in contact with natural elements (Maynard &Waters, 2007; Rivkin, 1995). Outdoor play is necessary for healthy growth and development of children. In general, children enjoy playing outside because the outdoor environment enables them to perform gross motor movements such as running, climbing, and jumping that are difficult to perform in indoor environments. Outdoor play allows children to master a number of skills (Stephenson, 2002). Although it is obvious that outdoor play is beneficial for children's well-being and development, research shows that outdoor play has been decreasing recently (Tremblay et al., 2015). Many factors such as changes in lifestyle, urbanization, use of technology, and children's safety are effectful in this decline.

Benefits of outdoor play

Outdoor play is a natural and critical part of a child's healthy development, and it has been demonstrated by many studies that outdoor play has positive contributions to children development (Bento & Dias, 2017; Clements, 2004; Erdem, 2003; Gray et al., 2015; Hinkley et al., 2018; McArdle et al., 2013; Price, 2019; Prince et al., 2013; Spencer & Woolley, 2000; Wells & Evans, 2003). Outdoors enable children to move freely, experience risky movements, make noisy voices, interact with friends, and contact with natural elements. Since outdoor play enables children with unstructured, interactive, different opportunities which are unforeseeable and risky, it helps children to have rich opportunities for learning, problem-solving and social interaction (Greenfield, 2004). While outdoors children move more, sit less, and play for longer.

The outdoors is also an open and free environment where children are exposed to fresh air, sunlight, nature and living things, which has positive benefits in terms of children's health and well-being. Throughout outdoor play, children not only become learners but also they act like teachers so that they can convey their experiences and knowledge with peers (Bilton, 2010; Dyment & Bell, 2008; Gray et al., 2015; Sandseter, 2009). Hinkley et al. (2018) stated that children who play outdoors less than their peers have lower social competencies, so it may be said that social emotional skills develop much more outside than inside. Outdoor play prepares children for adult life by improving their skills like social competence, cooperation, interpersonal skills, problem-solving, creative thinking and risk-taking which are necessary for adult life. In the light of all these, it may be concluded that outdoor play facilitates interaction with peers, thus providing more opportunities to support socialization and development of social skills like empathy and understanding of other people's feelings (Dowdell et al., 2011; Kahn & Weiss, 2017; Moore & Wong, 1997; Rivkin, 1995, 2000).

Outdoor play also contributes to the cognitive development of children and through these plays children have the opportunity to develop perceptual competences such as depth, shape , size and movement perception. It is also known that children's outdoor play experiences in the first years are linked to their later academic performance (Rakison, 2005; Singer & Singer, 2000). The greater freedom of movement and exploration provided by the outdoor environment also encourages the use and development of gross motor skills. Beside development of gross motor skills, studies have indicated that outdoor play is associated with higher vitamin D levels, better attention span, and better self-regulation. Finally, numerous studies have revealed that spending time outdoors reduces stress, mental fatigue, ADHD symptoms, anxiety, and risk of obesity (Burdette & Whitaker, 2005; Green et al., 2012; Kaplan & Kaplan, 1989; Kimbro et al., 2011; Özdemir & Yılmaz, 2008; Taylor & Kuo, 2009; Wells & Evans, 2003).

Parents perspectives about outdoor play

In a world where urbanisation increases, children spend most of their time in closed areas away from nature. It is seen that parents adapt to the conditions brought by this urbanisation and their children play less outdoors. A study showed that about half of children are not taken to play every day, and when they do, they usually go with their mother (Tandon et al., 2011). Such a decline is related to families' lifestyles and attitude towards the outdoor environment. One of the reasons for this decline is security concerns. It is known that the perception of risk significantly affects the level of parents allowing their children to play outside. A growing culture of fear about possible accidents affects parents' attitude towards outdoor play, so today children are kept indoors, engaged in structured activities, and controlled by adults.

According to the research of Lester and Russell (2008), although parents are aware of the positive effects of playing outdoors, their desire to protect their children outweighs, thus limiting their children's unsupervised play and limiting children's access to the outdoors. In addition to security concerns, the belief that children are more vulnerable and in need of protection, academically oriented lifestyles and playgrounds that do not respond to children's interests and needs are also factors that cause children to play less in the outdoors. Furthermore, technological developments and the difficulties of managing work and family life have led families and children to spend more time indoors, using screens as entertainment have brought sedentary lifestyles and created a barrier in front of outdoor play. It can be said that environmental changes and restrictions on children's activities as a result of parents' concerns have changed the nature of children's play and reduced the relationship between the child and the outdoor environment, pushing children into closed environments (Aarts et al., 2010; Brussoni et al., 2012; Cevher-Kalburan, 2014; Dwyer et al., 2007; Kernan & Devine, 2010; Little, 2015; Rivkin, 2000; Veitch et al., 2006; Waters & Rekers, 2019).

However, the unique characteristics and stimuli of the outdoor environment offer different play opportunities that are difficult to implement indoors. Providing an environment that meets the basic needs of children, where they can socialize with a sense of trust and belonging and have a chance to make discoveries is very important for the development of children (Casey, 2007; DeBord et al., 2005; Stephenson, 2002). As can be seen, the perceptions and attitudes of families greatly shape the child's life. As Bandura's social learning theory (1974) suggests, children's behaviour is shaped by their environment (Ernst, 2018). To conclude, outdoor play is one of the most important parts of a child's life, and families play a crucial role in providing children with appropriate play environments and ample time to play. It is a fact that the experience and freedom offered to children is influenced by the parents' perceptions about outdoor play. Metaphors are a powerful research tool that can be used to reveal personal perceptions, show the way individuals perceive the world and themselves, and explain abstract concepts. When the literature is examined, the results obtained from this research will contribute to the literature, since there is a limited study in which parents' perceptions of outdoor play are examined through metaphors. Therefore, the purpose of this study is to examine the parents' perceptions about outdoor play through metaphors. In line with this main purpose, interviews were conducted with parents to deepen the understanding of parents' perceptions about outdoor play. Thus, answers to the following questions were sought:

1. What are parents' metaphors about outdoor play?
2. What are the views of parents about the benefits of outdoor play to the child?
3. What are the challenges parents face during outdoor play time?

METHODS

Research Design

In this study, a phenomenology model, which is one of the qualitative research models, was used. Phenomenology is a research design that aims to understand people's inner world and their

consciousness structures (Mayring, 2014). In this research, it is investigated how parents perceive, explain, remember, and interpret "outdoor play" and what kind of language they use to convey this phenomenon. To interpret and understand the perception of parents about outdoor play the metaphor technique was used. Basically, metaphor which is mostly used to symbolize our mental and intellectual cognition system is the explanation of a concept, phenomenon, or event by analogy with another concept, phenomenon, or event (Oxford et al., 1998; Schmicking & Gallagher, 2010).

Data Collection

The participants of this research were the parents who have children between 0-72 months. In the beginning of the study, there were a total of 121 parents, but during the data analysis process 14 participants were eliminated from the study and the research was conducted with 107 parents, 96 mothers and 11 fathers. The working group was determined in line with the limitations of the pandemic period. Thus, the data has been collected via an online questionnaire (Google form). Data was collected through asking parents to complete the prompt "Playing outside is like….. Because ...." by focusing on only one metaphor to indicate their conceptualization of outdoor play. Furthermore, semi-structured interviews were conducted with a total of 19 parents, 14 of which were mothers and 5 were fathers. During these interviews, parents were asked about the benefits of outdoor play to the child and the difficulties they faced during outdoor play time, which enabled researchers to support the data obtained from the metaphor analysis and to examine parents' views in a more detailed way.

Data Analysis

Content analysis technique was used to evaluate the data obtained in the study. Content analysis method is used to analyse written, verbal, or visual data (Bengtsson, 2016; Mayring, 2014). When using content analysis, the aim is to build a model to describe the phenomenon in a conceptual form by distilling words into fewer content-related categories (Elo & Kyngäs, 2008). The analysis of the metaphors in this study included the following stages: (1) naming/labelling stage, (2) sorting (clarification and elimination) stage, (3) deciding the unit of analysis, (4) sample metaphor compilation and categorization stage, (5) establishing the inter-rater reliability rate. Firstly, the metaphors formed by the parents about the concept of "playing outside" were named by two researchers and then invalid data were removed. 14 papers eliminated from the study. In the next step, metaphors with similar characteristics were categorised independently by the two researchers. As a result of this procedure, eight conceptual categories were identified. Interviews are analysed by content analysis methods,too. Lastly, to establish the inter-rater reliability rate, Miles and Huberman's (1994) reliability formula was used and the agreement percentage between the researchers was calculated as .92 (i.e., Reliability = Agreement/Agreement + Disagreement x100), which means the level of agreement between the researchers was 92%.

RESULTS

The results of the research were presented under two subheadings to make a better understanding for the reader.

Results regarding parents' metaphors about outdoor play

Altogether participants produced 107 valid metaphors about the concept of outdoor play. At the end of the study, metaphors developed about outdoor play were collected in 8 categories according to their similar aspects. The categories and example metaphors for each category are shown in Table 1. Among all categories, parents developed the most metaphors in the freedom category and the least in the exploration category.

Table 1 The distribution of metaphors by categories

Categories (n=8)	f	%	Metaphors
freedom	41	38,7	being a bird, kite, breath, escape, infinity, flying in the sky
healing	24	22,6	medicine, cure, vitamin, sport
need	14	13,2	water, breathing, oxygen
fun	7	6,6	amusement park, rainbow
instructive	6	5,7	school, brain developer, skeleton key
happiness	6	5,7	dream, sea
peace	5	4,7	therapy
exploration	3	2,8	discovery, invention, gift, surprise

Main conceptual categories

The eight conceptual categories that were developed out of the 107 metaphors include the following:

Category 1: First and most developed category is “freedom”. Exemplary metaphorical expressions of this category are stated below.

- *Outdoor play is like flying in the sky because we feel as free as birds. (P95)*
- *It is the breathing space of the child because it is the place where he is intertwined with nature and is free, where he can run and release his energy. (P29)*
- *Outdoor play is like a bird released from a cage because in these days when we are immersed in technological tools, every step we take outside liberates us even more. (P48)*

Category 2: Example metaphorical expression for “Healing” category

- *Outdoor play is like a vegetable meal because it is beneficial for you. (P103)*
- *Outdoor play is like breathing because a deep and beautiful breath taken outdoors refreshes our body. (P88)*
- *Outdoor play is like a medication because it is not only good for both the soul and the body but also it creates unique subconscious learning opportunities. (P28)*

Category 3: Example metaphorical expressions for the “Need” category

- *Outdoor play is like water because if you drink as much liquid as you want, nothing can replace water. No matter how much the child plays at home, he can't enjoy it as much as playing outdoors. (P62)*
- *Outdoor play is like breathing because we cannot live without breathing and playing. (P81)*
- *Outdoor play is like food and water because it is a basic need. (P34)*

Category 4: Example metaphorical expressions for the “Fun” category

- *Outdoor play is like watching the sky because daydreaming is the funniest game. (P79)*
- *Outdoor play is like an amusement park because it's so diverse. (P54)*
- *Outdoor play is like gliding over a rainbow because I can't think of an activity as enjoyable and instructive as playing in nature in the fresh air. (P23)*

Category 5: Example metaphorical expressions for the "Instruction" category

- *Outdoor play is like a school because there is so much to learn. (P52)*
- *Outdoor play is like a skeleton key because it serves the development of the child in many areas and opens the doors of growth for each development area. I think nature is the best teacher. (P78)*
- *Outdoor play is like a brain developer because oxygen and nature are beneficial for the human brain. (P49)*

Category 6: Example metaphorical expressions for the "Happiness" category

- *Outdoor play is like a dream because my son is so happy when he's playing outdoors, as if he's not in this world. (P5)*
- *Outdoor play is like swimming in the sea, you relax, you'll be happier. (P12)*
- *Outdoor play is like a star because the shining of the star makes you happy. (P109)*

Category 7: Example metaphorical expressions for the "Peace" category

- *Outdoor play is like meditation because it helps the child find inner peace and clear his mind. (P15)*
- *Outdoor play is like meditation because while the child is playing freely, they also relax, get fresh air and rest. (P50)*
- *Outdoor play is like therapy because it helps to clear your mind. (P30)*

Category 8: Example metaphorical expressions for the "Exploration" category

- *Outdoor play is like invention because there is always so much to discover. (P40)*
- *Outdoor play is like exploration because while you're out, you can discover and play with so many different things. (P66)*
- *Outdoor play is like a gift because it happens surprisingly. (P36)*

Results regarding parents' interviews about outdoor play

Among the parents participating in the study, 19 of them volunteered to be interviewed. Semi-structured interview form consists of questions about the benefits of outdoor play and the difficulties they faced during outdoor play time.Considering the views of the parents about the benefits of outdoor play, it was seen that they regard outdoor play as a tool for socialisation, discovery, and healthy lifes. Moreover, they believe that outdoor play is beneficial for all developmental areas.

Example statements:

- *Outdoor, which is a more natural environment as opposed to indoor areas, creates an opportunity for my child to socialize with his peers and to explore the world first-hand (P34)*

- *I think that the outdoors provides much of the contribution that the child needs in all areas of development, in accordance with the natural developmental speed of the child. Thus, outdoor play ,especially played in nature, will contribute to motor, cognitive, language, and social emotional development of children (P64)*

- *My child moves more freely when outdoors, so he feels more free, which makes him happier (P 75)*

When the difficulties faced by the parents during the outdoor play time are examined, it is seen that the risk of getting sick, safety problems, possibility of accidental injuries, unhygienic play areas, lack of appropriate space for outdoor play, and negative attitudes of other children and parents are the main difficulties parents encounter.

Example Statements

- *Children unintentionally harm each other. Self-harming with uncontrolled movements can occur (P34)*

- *The risk of getting sick increases in winter. My child sweats with excessive movement and takes off her/his coat. (P64)*

- *My child doesn't want to go back home. (P75)*

- *Insecurity of the playground, when my child runs, she/he enters the streets or areas that may be dangerous. (P12)*

- *We're having a hard time finding a suitable playground. Places that are either too structured, too crowded or lack green areas (P25)*

- *Negative behaviour of other children and families (P36)*

- *Allergic reactions may occur. P62)*

CONCLUSION AND DISCUSSION

As a result of the research examining the metaphors produced by parents with 0-72 months old children regarding the concept of outdoor play, it was seen that parents produced metaphors in the categories of freedom, healing, need, entertainment, instruction, peace, and exploration. In addition, as a result of the interviews, the parents stated that outdoor play contributed to the development, socialization and health of the children. Considering the difficulties faced by the parents, it was seen that parents concerned about the risk of getting sick and accidential injuries, safety problems, reaching the outdoor play area and the negative behaviors of other parents and children. As a result, although the parents mentioned about the difficulties they faced, it was seen that they have positive perceptions toward outdoor play.

As it can be seen in the findings, children don't want to go back home when they are outdoors. In fact, this situation is not a surprise because play is in the "nature" of children (IPA, 2014). As The United Nations Convention on the Rights of the Child stated play as a fundamental child right (UNICEF, 1989). Hence, allowing children to play as they want and as much as they want is important in terms of respecting the child's right to play. Since perceptions of families have a strong effect on the child's right to play, outdoor play also can be affected by this perception. Thus, it is

important to examine the parents' views about outdoor play because they are the ones who provide opportunities in the outdoor environment (İvrendi et al., 2019). However, to get the benefit of outdoor play, the child should have as much and easy access to outdoor play as possible. This can be achieved if families have a positive perception of outdoor play. Similarly, Goodyear-Smith and Laidlaw (1999) emphasized in their research that families who want their children to be psychologically resilient, strong in problem-solving skills, have high risk-taking skills, and physically competent should have positive perceptions about outdoor play.

When the studies on outdoor play with parents are examined, it is seen that parents generally have positive perceptions about outdoor play, but when they come to the part of making the child benefit from outdoor play, they display a more controlled attitude towards outdoor play. Namely, it is possible to say that they believe that outdoor play is beneficial and necessary, but they are concerned about some environmental reasons at the point of creating an opportunity for this. As Little (2015) states, parents' fears and anxieties are effective on children's outdoor play experiences. It has been found that due to these fears, children spend more time in their own homes or in their friends' homes, during which time they are mostly directed to activities that are structured and controlled by their parents.

Cultural differences also have an impact on parents' attitude toward outdoor play. Yalçın (2015) found that when asked Finnish parents about the significance of outdoor play, they highlighted the importance of health, freedom of movement, creativity, and physical development. In the same study, it was found that Turkish parents also have a positive attitude toward outdoor play, but they emphasized the benefits of socialization, health, and getting to know nature. Similarly, in Scandinavian culture, children's outdoor play activities are highly valued and considered a part of education, while in the United States, England and Turkey outdoor play is regarded as free time activity (Allin et al., 2014; McBride , 2012; Prince et al., 2013).

When the literature is examined, it has been found that the income status of the family influences the children's use of outdoor play. When the direction of this effect is examined, Wijtzes et al. (2014) stated that there is a negative relationship between outdoor play and income level because families with high incomes provide their children with more structured games. On the other hand, according to Delisle Nyström et al. (2019) study, there is a positive relationship between outdoor play and income level because families with low incomes have less access to the safe and child-friendly playgrounds due to the conditions of the region they live in, their distrust towards the environment and neighbourhood, and the traffic density, so they prefer outdoor play less.

In this study, the perceptions of parents about outdoor play were examined through metaphors, and as a result of data analysis, it is concluded that families have positive perceptions about outdoor play. They associate outdoor play with freedom, healing, need, fun, instruction, happiness, peace, and exploration. As a result of the interviews conducted with parents, it is seen that they regard outdoor play as a beneficial activity for children while emphasising that they experience some difficulties such as safety, health and reaching the appropriate outdoor area.

When the results are examined together with the literature, it is seen that the parents are aware of the benefit of outdoor play for the child, perceive it positively, but limit their children's outdoor play opportunities, or try to structure it especially because of their concerns about especially security and health issues. Outdoor play provides children with a rich learning environment and the opportunity to gain many skills, but how much children can benefit from this opportunity is shaped by the perceptions and attitudes of the parents. Therefore, child-friendly, and accessible environments should be created to eliminate the safety concerns of parents. Furthermore, parents should be informed about what they can do for children to spend quality time in these places. Comparison of the relationship between parents' perceptions about outdoor play and children's use of outdoor play can be a suggestion for further research.

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International Journal of Progressive Education, Volume 18 Number 4, 2022

Teaching Locally, Acting Globally: The Effect of Pre-Service Teachers' Cultural Intelligence Levels on Their Perceptions of Global Citizens

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Abstract

The purpose of this study was to examine the relationship between cultural intelligence and global citizenship. The study group of the research consisted of 336 pre-service teachers, including pedagogical formation students, selected by a random sampling method from a state university in eastern Turkey, where the immigrant population is dense. Both the "Cultural Intelligence Scale" and "Global Citizenship Scale" were used as data collection tools. In order to statistically determine the levels of cultural intelligence and global citizenship by demographic variables, independent samples t-test and one-way ANOVA were employed by the researcher. Likewise, while the Pearson product-moment correlation analysis was implemented to examine the relationships among the variables, multiple regression analysis was used to determine the predictive coefficients between the variables. Based on the research findings, cultural intelligence was positively correlated with global citizenship. The behavioral dimension of cultural intelligence was the best predictor of global competence. Cultural intelligence levels of pre-service teachers seem to have a significant impact on shaping their process of becoming global citizens. If a person could be able to change his or her body language, spoken language, expressions, and behaviors when encountering any person or people from different ethnic groups and identities, this would mean that s/he is using the behavioral component of cultural intelligence. In this respect, cultural intelligence facilitates being a global citizen and increases adaptation. Therefore, the dimension of cultural intelligence evidently appears to be an essential factor for global citizenship.

Keywords: Intelligence, Culture, Cultural Intelligence, Citizenship, Global Citizen

DOI: 10.29329/ijpe.2022.459.10

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INTRODUCTION

The need for people to live together has revealed culture as a mechanism that regulates the relations between them (Demirel & Kişman, 2001). Culture is the identity of a nation. According to Browne (2008), culture is the life path that any society shapes by learning language, beliefs, values, norms, customs, dress, nutrition, roles, knowledge, skills and other things. One of the most important aspects of the 21st century is to manage and harmonize human communities from different cultures (Du plessis, 2011). The necessity of different cultures to live together has given citizenship a different meaning. Harris (2006) stated that due to the inevitable intercultural interaction, cultural skills have increased a lot today. He also stated that cultural abilities, that is, cultural intelligence, are an important factor in facilitating intercultural interaction and communication. Cultural intelligence could be an important tool for people to become global citizens. Because people who can use different dimensions of intelligence might more easily understand other people in the world. They can communicate and empathize more easily with them. In this respect, the concept of cultural intelligence becomes a vital concept.

In the classical sense, citizenship is a state of legal priorities, rights and responsibilities for people of any national identity. With globalization and the new information age, some changes have occurred in the concepts of national identity and classical citizenship. The concepts of multiculturalism, cultural intelligence and global citizenship have emerged with this new trend.

The concept of Cultural Intelligence

P. Christopher Earley and Elaine Mosakowski introduced cultural intelligence as a new type of intelligence for the first time. This concept is expressed in English as "Cultural Intelligence" (CI), or "Individual's Cultural Quotient" (CQ). Howard Gardner presented the intelligence theory with 7 different dimensions by extending it from a single dimension in 1983. Thus, these 7 different types of intelligence emerged as a separate theory. These were musical intelligence, linguistic intelligence, spatial intelligence, mathematical intelligence, interpersonal intelligence, kinesthetic intelligence and naturalistic intelligence. Cultural intelligence, which was added to these later, emerged as a type of intelligence that is influenced by each of this intelligence and carries something from each of them (Gardner, 1983).

P. Christopher Earley and Elaine Mosakowski defined cultural intelligence as the successful adaptation of an individual to different or multinational cultures. According to Earley & Mosakowski (2004), an individual’s adaptation to a different cultural environment is proportional to his/her cultural intelligence level. In other words, individuals with high cultural intelligence could easily adapt to different cultures, while individuals with low cultural intelligence levels are difficult to adapt (Earley & Mosakowski, 2004). The main way to ensure successful integration with different cultures is to have cultural intelligence. Individuals with cultural intelligence developed intercultural abilities and skills (Johnson et al, 2006). Cultural intelligence is an individual's capacity to effectively use intercultural communication, which can include national, ethnic, organizational and other types of culture (Ang & Van Dyne, 2008; Earley & Ang, 2003). Cultural intelligence, for instance, is the fact that a Turkish sees a Frenchman as his friend and treats him like a friend (Yeşil, 2010). Maznevski (2006), on the other hand, defined cultural intelligence as respecting people from other cultures, accepting them as they are and managing intercultural problems. Cultural intelligence is the behavioral success of individuals in multicultural environments (Şahin, 2011). Being able to understand the cultures of other societies and being sensitive to them might help them to be a world citizen more easily. Sensitivity towards different cultures enables them to develop positive feelings towards their cultures. In other words, approaching them without prejudice helps them understand, listen, get to know and respect them (Balcı & Bekiroğlu, 2011).

Culturally intelligent people might understand individuals from other cultures in every sense. When a Turkish citizen sees a Japanese gesture or facial expression, s/he says “*Oh, you did it just like the Japanese!*” when s/he sees it, which is an example of cultural intelligence in a broader sense. With

multinationality, the possibility of people from different cultures living together has been proportional to the cultural intelligence of individuals. Individuals who respect diversity and have a global understanding of culture adapt more positively to societies in different cultures. Such individuals respond to the behaviors of individuals in other cultures with more appropriate behaviors (Early & Mosakowski, 2004).

Individuals who were exposed to different cultures know better how to react to the events they encounter and how to find a solution in the face of any problem, depending on their cultural intelligence level. People with a high level of cultural intelligence get integrated easily into multicultural societies and have fewer problems. These people could also easily perceive the lifestyles, religious beliefs, customs and traditions of different societies.

Globalization and Global Citizen

In this period called the era of globalization, information and technology have brought people and societies closer to each other. An event that happened anywhere in the world in the past was only a problem in that region, but today it can become a problem of the whole world. One of the most striking examples that can be given to this is that Covid-19 has suddenly turned the whole world into a global village. The rate of spread of this epidemic disease is the most significant argument that can be given about how globalized the world is. In the era we live in, human beings are interacting more than ever before. With globalization, an economic, political and cultural unification has occurred in the world. The circulation of capital has increased in the world, the places have become closer, the world has shrunk and the borders in the world have been removed, in other words, the world has become a single socio-economic market (Kaçmazoğlu, 2002). Although the definitions related to globalization are different, it can be defined as follows with the perspective desired to be reached: Globalization is the social, economic and cultural convergence of people in the universe, the world becoming a small village by being free from borders, in short, the shrinking of the world and the emergence of the awareness of being perceived as a single place (Erdem, 2008). All these developments have put forward a need to raise a new type of citizen who can understand the world, overcome the problems that may arise and bring solutions to them, which led to the emergence of a global citizen.

The concept of citizenship has undergone significant changes over time. The emergence of multicultural societies has changed the meaning and context of the concept of citizenship with this aspect. The emergence of countries with a predominantly immigrant population such as Canada and the United States has moved the concept of citizenship away from the context of the nation-state. As a result of World Wars I and II, the concept of citizenship became synonymous with the concept of the nation-state. In the following processes, intense migrations, wars and economic problems in some countries caused a significant displacement of the population in the world. As a result of this change of place, very different cultures, ethnic structures, religious beliefs, traditions and customs have begun to live together. This has led to the formation of a global citizen of the world by getting over the political and legal limits of national citizenship.

Global citizenship is a sense of belonging to a wider community and common humanity. Global citizenship emphasizes political, economic, social, cultural interdependence and interdependence in a local, national and global context (UNESCO, 2014). According to Oxfam (2007), a non-governmental social organization, global citizens are those who fulfill their social responsibilities, see differences in society as an advantage, do not remain silent in the face of social inequalities, are sensitive, define themselves as a global citizen and know their responsibilities and rights. In particular, the concept of citizenship has gone beyond political borders and this has led to the formation of a global citizen identity.

The concept of citizenship, which took its place on a national line after World Wars I and II, separated from the concept of nationality with globalization. It is now seen that a citizenship model has emerged, not with political borders, but with social consciousness. In the new world order, citizenship has crossed political borders. However, in this respect, the global citizen does not have a

constitutional identity. A global citizen is a citizen whose identity is enriched with social responsibility, respect for differences, knowledge and skills on a global scale. Although the global citizen is free from national citizenship, he cares about national values and does not underestimate them. While the concept of global citizenship is expressed as the emergence of a common culture as a result of the convergence of world cultures, it is also defined as a way of enabling societies to see different aspects of each other (Keyman, Sarıbay, 2000). A global citizen is someone who respects and protects the earth and people. These people act with the understanding of social justice. Their main purpose is to make the world a more livable place for all people (Burman et al., 2013). Global citizens are those who ethnically remove ties of blood and dedicate themselves to global causes (Dower, 2000). Based on all these definitions, we can state that globalization has led to the emergence of a new human character. In this respect, Global citizens emerge as people who do not feel that they belong only to political borders or identities, who devote themselves to finding solutions to the problems of other people around the world, who strive and work for the world to become more reliable and livable and who devote themselves not only to the society they belong to but to the common good of the whole world.

While the coexistence of different cultures reveals globalization, cultural intelligence is an important factor for the harmonization of these cultures. Because being able to empathize with different cultures is possible with the type of cultural intelligence (İbiş, 2018). In today's world, we are in contact with people from different cultures, beliefs and ethnic origins as a result of the ease of going to different countries, international education, increasing job opportunities and forced migration. It is extremely important to know and understand different cultures in order to live together with these people in peace and tranquility. Cultural intelligence has a very important place on the basis of being sensitive to differences and behaving well. People with a high level of cultural intelligence and sensitivity could easily adapt to differences and could be more tolerant of different cultures. This would make it easier to be a global citizen in the globalizing world and would give citizenship a new meaning and dimension while enabling people to live together in harmony (Özdemir, 2019).

Importance and Purpose of the Research

Due to the conflicts and ISIS, many people in the Middle East had to migrate from their own lands to other countries. Turkey is one of the countries that accept foreign people, especially refugees and asylum seekers from Middle Eastern countries such as Syria, Iraq, Iran and Lebanon. Turkey is also the transition point from the Middle East to Europe. Undoubtedly, such situations significantly affect the life situations, traditional values and basic cultural structures of Turkey. Well, are the people in Turkey, especially the Z-generation and intellectual university youth ready for this cultural interaction?

Studies on this subject were conducted in Turkey (Akgül, Kaptı, & Demir, 2015; Ercoşkun, 2015; Emin, 2016; Tosun, A., et al., 2018). revealed that refugee children face many integration problems after migration. One of them was not being able to continue their education due to various reasons. Besides, children who receive education in their mother tongue (Arabic) have problems with integration, cannot establish a dialogue with teachers, very few of them continue their education in public schools after the education they receive, early marriages of girls, and work to provide financial support to their families are among the problems that hinder education life and thus integration. These problems restrain children's emotional and mental development. This prevents them from being a global citizen integrated with the world due to their insufficient level of cultural intelligence.

With globalization, it is aimed to strengthen human relations and communications, make distances close and create a value-based world order (Özden & Erbay, 2018). In our age, different states contain and deal with very different ethnic groups with the globalization of the world. Both the desire of these groups to keep their own cultures alive and the problems they experience in learning about the different cultures they have just learned naturally lead to different problems (Ho, 2009).

Cultural intelligence emerges as a very important concept in today's global world, where scientists consider it as a different type of intelligence and claim that it includes all other types of intelligence after 7 different types of intelligence. Especially in the world, which has turned into a global village with the increase in transportation opportunities, the easy adaptation of people to the new regions they go to is discussed in relation to these cultural intelligence levels. In a society where globalization is intensifying, the functionality of the concept of cultural intelligence is important. Shokef and Erez (2008) argue that cultural intelligence might create a global identity in multicultural societies. Goh (2012), on the other hand, claimed that in order for the citizens of a country to think, take responsibility and act in a global context, they must act on the basis of global intelligence in multicultural education practices. In a society like Turkey, which receives intense immigration and where different cultures live together, it is thought that cultural intelligence would be a remarkable topic in multicultural education practices. Since higher education includes people from different cultures and ethnicities, investigating the cultural intelligence levels of students at this level would make an important contribution to the literature. As a result, within this study, both the cultural intelligence levels of the students will be determined and the relationship between cultural intelligence and global citizenship will be discussed.

METHOD

This study is a correlational quantitative study. Correlational studies are studies in which the relationships between two or more variables are examined without intervening in any way (Büyüköztürk et al., 2011) The correlational research method offers the opportunity to explain the relationship between the variables and predict the results (Tekbıyık, 2014). The purpose of correlational studies is to understand the measurement values of two or more statistically related variables. The stages of correlational research are determining the research problem, selecting the sample, developing data collection tools, collecting data, analyzing and interpreting data. In this study, the correlational method was found suitable for the study, since the sample of the interaction between the cultural intelligence levels of the pre-service teachers and their perceptions of global citizenship was handled with a random method as much as possible (Çepni, 2012).

Study Group

The study group of the research consisted of 336 pre-service teachers, 176 females and 160 males, who were selected by random sampling method from a state university in eastern Turkey, including the students who continue their pedagogical formation education. Likewise, the data of this study were obtained from pre-service teachers studying at the Faculty of Education in a state university in eastern Turkey, where the immigrant population is dense. This characteristic thus adds to the value of this study. Pre-service teachers voluntarily participated in the study and their ages ranged from 18 to 30.

Data Collection Instruments

Cultural Intelligence Scale (CQS): The original instrument was developed by Ang et al. (2007) and adapted into Turkish by İlhan and Çetin (2014). The scale is 5-point Likert type and consists of 20 items and 4 sub-dimensions (metacognition, cognition, motivation and behavior). As a result of a similar scale criterion study, a correlation of .61 between the CQS and the Intercultural Sensitivity Scale and .44 between the Tromso Social Intelligence Scale was found. In the reliability study, the Cronbach's alpha internal consistency coefficient for the whole scale was found .85 and the test-retest reliability correlation coefficient was .81. The corrected item-total correlation coefficients ranged from .33 to .64.

Global Citizenship Scale (GCS): GCS was developed by Morais and Ogden (2011) and adapted to Turkish culture by Akın et al. (2014). As a result of confirmatory factor analysis, the fit index values of 30 items of the 3-dimensional (social responsibility, universal competence and universal civic commitment) model were found to be (χ^2=562.22, sd=395, RMSEA=.038, NFI= .90,

CFI=.90, IFI=.91, SRMR=.066). The Cronbach Alpha internal consistency reliability coefficient of the scale was found to be .60, .69, and .86, respectively. The corrected item-total correlation coefficients ranged from .16 to .65.

Analysis

The data obtained from the participants were analyzed through the SPSS, statistical analysis software. Independent samples t-test and one-way ANOVA were used to determine the levels of cultural intelligence and global citizenship according to demographic variables. Pearson product-moment correlation coefficient analysis was used to examine the relationships among the variables, and multiple regression analysis was used to determine the predictive coefficients between the variables. The significance level was taken as p <.01.

FINDINGS

Correlation analysis was conducted to examine the relationship between pre-service teachers' cultural intelligence scale and global citizenship scale scores. Before the analysis, the normal distribution of the scale scores was examined. Pearson correlation analysis was used because the scale scores showed normal distribution. The results were presented in Table 1.

Table 1. Examination of the relationship between pre-service teachers' cultural intelligence scale and global citizenship scale scores

		Metacognition	Cognition	Motivation	Behavior
Global Civic Engagement	r	,614**	,646**	,534**	,540**
	p	0,000	0,000	0,000	0,000
Global Competence	r	,528**	,548**	,610**	,718**
	p	0,000	0,000	0,000	0,000
Social Responsibility	r	,629**	,601**	,584**	,562**
	p	0,000	0,000	0,000	0,000

When Table 1 is examined, it is seen that there was a moderately positive statistically significant (respectively r = 0,614; 0,646; 0,534; 0,540; p<0,05) between the global civic engagement scores of teacher candidates and the scores of global intelligence metacognition, cognition, motivation and behavior dimensions. Accordingly, it seems that as the global civic engagement scale scores of pre-service teachers increase, their global intelligence scale scores increase. The correlation between the global competence dimension scores of teacher candidates and the global intelligence metacognition, cognition, and motivation dimension scores was at a moderately positive level (respectively r = 0.528; 0.548; 0.610; p<0.05) and a positive high level with the behavior dimension scores (r = 0.528; 0.610; p<0.05). 0.718) was found to be statistically significant. Accordingly, it can be interpreted that as the global competence dimension scores of pre-service teachers increase, their global intelligence scale scores increase. There was a positive and moderately statistically significant relationship (respectively r = 0.629; 0.601; 0.584; 0.562; p<0.05) between pre-service teachers' social responsibility dimension scores and global intelligence metacognition, cognition, motivation and behavior dimension scores. Accordingly, it can be said that as the social responsibility dimension scores of teacher candidates increase, their global intelligence scale scores increase. As a result, cultural intelligence was positively correlated with global citizenship.

Multiple regression analysis was conducted to determine to what extent the global competence dimension of the Global Citizenship Scale predicted the dimensions of global intelligence. The results were given in Table 2.

Table 2. Examination of the state of global intelligence predicting global competence

	Non-standardized Regression Coefficient	Standardized Regression Coefficient	T	p
Constant	4,480		2,276	,023
Metacognition	,337	,121	2,615	,009
Cognition	,241	,130	2,702	,007
Motivation	,313	,144	2,648	,008
Behavior	1,079	,498	10,457	,000

Dependent Variable: Global Competence

As can be seen in Table 2, the standardized path coefficient from the metacognitive dimension of global intelligence to global competence was 0.121; the standardized path coefficient from the cognition dimension of global intelligence to global competence was 0.130; the standardized path coefficient from the motivation dimension of global intelligence to global competence was 0.144; and the standardized path coefficient from the behavioral dimension of global intelligence to global competence was 0.498, and the path coefficients were statistically significant ($p<0.05$). It was determined that the global intelligence dimension with the highest standardized path coefficient was the behavior dimension. Therefore, it could be said that the behavioral dimension of cultural intelligence was the best predictor of global competence.

Unrelated samples t-test was used to examine the statistically significant difference between pre-service teachers' cultural intelligence and global citizenship levels according to gender, since the scale scores at the gender levels showed a normal distribution. The results were shown in Table 3.

Table 3. Examination of global intelligence and global citizenship levels of pre-service teachers by gender

	Gender	n	$\bar{X}$	ss	sd	t	p
Metacognition	Female	176	15,67	4,03	334	1,172	0,242
	Male	160	16,20	4,30			
Cognition	Female	176	24,04	6,54	334	1,048	0,296
	Male	160	24,76	5,93			
Motivation	Female	176	19,52	5,22	334	0,916	0,360
	Male	160	20,05	5,43			
Behavior	Female	176	19,87	5,18	334	0,837	0,403
	Male	160	20,36	5,54			
Global Civic Engagement	Female	176	51,27	13,07	334	1,614	0,108
	Male	160	53,57	13,03			
Global Competence	Female	176	43,01	11,09	334	0,992	0,322
	Male	160	44,26	12,14			
Social Responsibility	Female	176	24,58	6,12	334	1,448	0,149
	Male	160	25,58	6,49			

Table 3 indicates that cultural intelligence scale scores (metacognition, cognition, motivation, behavior) and global citizenship scale scores (global civic engagement, global competence, social responsibility) of pre-service teachers were not statistically significant ($p>0.05$). That is, there was no statistically significant difference by gender in the cultural intelligence and global citizenship levels of pre-service teachers.

Since the scale scores at the gender levels showed a normal distribution, analysis of variance (ANOVA) was used to examine the statistically significant difference in the levels of cultural intelligence and global citizenship of pre-service teachers according to their age. The results were presented in Table 4.

Table 4. Examination of global intelligence and global citizenship levels of teacher candidates by age

Age		n	$\bar{X}$	ss	sd	F	p
Metacognition	18-20 years old	98	16,36	3,81	(2, 333)	2,523	0,082
	21-25 years old	161	16,10	4,39			
	26 yaş ve üstü	77	15,02	4,02			
Cognition	18-20 years old	98	24,70	6,77	(2, 333)	0,683	0,506
	21-25 years old	161	24,54	6,23			
	26 years and older	77	23,66	5,64			
Motivation	18-20 years old	98	20,25	4,89	(2, 333)	0,673	0,511
	21-25 years old	161	19,70	5,61			
	26 years and older	77	19,33	5,24			
Behavior	18-20 years old	98	20,44	4,98	(2, 333)	0,515	0,598
	21-25 years old	161	20,14	5,43			
	26 years and older	77	19,61	5,66			
Global Civic Engagement	18-20 years old	98	53,30	12,90	(2, 333)	0,377	0,686
	21-25 years old	161	51,85	13,45			
	26 years and older	77	52,24	12,63			
Global Competence	18-20 years old	98	43,54	12,75	(2, 333)	0,010	0,990
	21-25 years old	161	43,70	11,63			
	26 years and older	77	43,50	10,03			
Social Responsibility	18-20 years old	98	25,14	6,48	(2, 333)	0,055	0,947
	21-25 years old	161	24,94	6,12			
	26 years and older	77	25,20	6,56			

Table 4 shows that cultural intelligence scale scores (metacognition, cognition, motivation, behavior) and global citizenship scale scores (global civic engagement, global competence, social responsibility) of the pre-service teachers according to their ages did not show a statistically significant difference ($p>0.05$). That is, the cultural intelligence and global citizenship levels of teacher candidates did not differ statistically by their age.

DISCUSSION AND CONCLUSION

The results obtained in the research pointed out that cultural intelligence and global citizenship are positively correlated. As cultural intelligence increases, global citizenship increases as well. Similarly, Yüksel and Ereş (2018) found that there is a positive relationship between the perception of global citizenship and cultural intelligence. Cultural intelligence and global citizenship have several important points in common. The first one of them is respect for differences. Both people with high cultural intelligence and people with high global citizenship attitudes have high levels of respect for differences. Respect for differences is an integral part of multicultural education (Sincer, Severiens, & Volman, 2019). Koçak and Özdemir (2015) found in their study on the attitudes of teacher candidates towards multicultural education that there is a significant, positive and moderate relationship between cultural intelligence and attitudes towards multicultural education. Şahin and Gürbüz (2012) found that cultural intelligence positively affects global (organizational) citizenship behavior in their research titled *The Effect of Cultural Intelligence on Global Citizenship Behavior.* A study was done by Gezer and Şahin (2017) on the relationship between attitude towards multicultural education and cultural intelligence demonstrated that the attitude towards multicultural education is in a positive and moderately significant relationship with the sub-dimensions of cultural intelligence, behavior, motivation and metacognition. Similarly, Ekici (2017) found that there is a positive relationship between pre-school teacher candidates' attitudes towards multicultural education and cultural intelligence. Rockstuhl and Ng (2008) determined that cultural intelligence increases the quality of multicultural education by positively affecting interpersonal trust. The second common point is intercultural sensitivity. In research on cultural intelligence, Özdemir (2019) revealed that cultural intelligence has a significant effect on the dimensions of intercultural sensitivity, responsibility in communication, self-confidence, enjoyment, and attention. The high level of cultural intelligence of

individuals not only makes the person more sensitive to other cultures but also facilitates communication and adaptation. The third important common point is intercultural competence (Trede, Bowles, & Bridges, 2013). It is a normal situation that there is a relationship between cultural intelligence and global citizenship, which includes three important concepts such as respect for differences, intercultural sensitivity and intercultural competence. Consequently, the level of cultural intelligence provides an understanding of cultures and makes it easier for people to become world citizens (global citizens). The findings of the studies in the related literature supported this argument together with the current research.

The behavioral dimension of cultural intelligence is the best predictor of global competence. Tsai and Lawrence (2011) in their research on foreign students in Tavyan concluded that cultural intelligence positively affects intercultural harmony and that cultural intelligence increases intercultural communication. Şahin and Gürbüz (2012) revealed in their research that there is a significant and positive difference between cultural intelligence and global citizenship behavior, and as a result of this, individuals who operate in multicultural environments have a positive effect on their behavior towards different cultures. Ward and Fischer (2008) found that cultural intelligence has a positive effect on multicultural behavior and that individuals with cultural intelligence easily adapt to the multicultural environment. Amiri Moghimi and Kazemi (2010) found in their research on the behavior of people in different cultures in their work environment that there is a significant relationship between the performance of employees and the metacognitive, cognitive and motivational factors of cultural intelligence. Besides, in their study on the life satisfaction of cultural intelligence, Büyükbeşe and Yıldız (2016) discovered that students' metacognitive and motivational cultural intelligence positively affect their life satisfaction in a significant way. Koyuncu and Akdöl (2019) found in their study on cultural intelligence that there is a significant and positive relationship between metacognitive, motivational and behavioral cultural intelligence, and entrepreneurial orientation with the dimensions of risk-taking, innovation and proactivity. Templer et al. (2006) revealed that cultural intelligence is effective in three types of intercultural adaptation (general, work and interactional). In this respect, it coincides with the results of this research. Cultural intelligence is one of the important tools used to manage cultural differences. The level of cultural intelligence is directly proportional to the interaction and agreement levels of cultures. Individuals with cultural intelligence could easily understand the behaviors, gestures and mimics of individuals from different cultures. If a person could be able to change his or her body language, spoken language, expressions and behaviors when s/he encounters any person or people from different ethnic groups and identities, this means that s/he is using the behavioral component of cultural intelligence (Mercan, 2016a). In this respect, the behavioral dimension of cultural intelligence facilitates being a global citizen and increases adaptation. Therefore, the behavioral dimension of cultural intelligence is an essential factor for global citizenship.

Moreover, there was no statistically significant difference by gender in the cultural intelligence and global citizenship levels of teacher candidates. McMurray (2007) concluded in a study on University of California graduates that the gender variable did not make a significant difference in intercultural sensitivity. Lawrence (2011)'s research on the effects of cultural intelligence, self-efficacy and intercultural communication on the intercultural adaptation of international students in Taiwan revealed that there was no significant difference by gender variable. Likewise, in their study of pre-service teachers, Kaya and Kaya (2012) determined that the perception of global citizenship did not create a significant difference in pre-service teachers by gender. Şahin and Yıldız (2016) also revealed in their research on world citizenship that the perception of citizenship does not make a significant difference by gender variable. Mercan (2016b) concluded in research on cultural intelligence in a multicultural environment that being a woman or a man does not affect cultural intelligence. Özdemir (2019) found that gender has no effect on cultural intelligence in general. According to the results of the study conducted by Spinthourakis et al. (2009) revealed that the intercultural sensitivity perception levels of university students did not make a significant difference by gender. Research conducted by Aksoy (2012) indicated that gender did not have a significant and positive effect on cultural intelligence. Hareket and Altınok’s (2020) research on the intercultural attitudes of pre-service classroom teachers revealed that the intercultural sensitivity scores of teacher candidates do not differ significantly by gender variable. İnan (2017) concluded in a study on pre-service teachers that there is

no statistically significant difference in the cultural intelligence scores of pre-service teachers by gender variable. In this respect, the findings in the literature were in line with the results of the current study. Again, similar results were found in similar studies on this subject (Eren, 2020; Günaydın, 2019). On the other hand, there were studies in the literature showing the opposite of these findings. For instance, Abaslı and Polat (2019) in their study on university students studying in Ankara found that the perception levels of cultural intelligence differed significantly in favor of male students by gender. On the other hand, Banos (2006) carried out a research on the intercultural sensitivity of young people and concluded that the age variable creates a significant difference in favor of female students. Although there is no statistical difference in general terms in these studies, there was a difference in favor of male or female students in sub-dimensions. Therefore, the argument in the majority of studies in the literature revealed that gender does not make a statistically significant and positive difference in cultural intelligence. The reason for this was that the male and female students included in the research have gone through similar educational processes, they were chosen from close age groups and mostly from the same regions, they had less interaction with different cultures, and their travels abroad were less. For this variable; therefore, it would be beneficial to conduct research in larger regions and on more study subjects.

In terms of the age variable, the cultural intelligence and global citizenship levels of pre-service teachers were found not to be statistically significant by their age. In a study on teachers, Fretheim (2007) concluded that the age variable did not make a significant difference. Similarly, Banos (2006) concluded in a study on the intercultural sensitivity of young people that the age variable did not make a significant difference. McMurray (2007), in a study on University of California graduates, also concluded that the age variable did not make a significant difference in intercultural sensitivity. In their study on university students, Abaslı and Polat (2019) revealed that the intercultural sensitivity and cultural intelligence perception levels of students do not differ by age. In their study, Soltani and Keyvanara (2013) found that there was no statistically significant difference between the cultural intelligence perception levels of university students by age variable. In this respect, it was consistent with the results of the current research. There were also studies stating the opposite. For instance, in their study on teachers, Westrick and Yuen (2007) concluded that there is a positive and significant relationship between the age variable and sensitivity to different cultures. A study done by Spinthourakis et al. (2009) showed that the intercultural sensitivity perception levels of teacher candidates differ by age variable. For them, the reason for this would be related to the circle of friends the young people had. They found that people who have friends from different cultures had higher intercultural sensitivity than people who only have friends from their own culture. Üstün (2011) also reached findings that support these results. Üstün (2011) determined that pre-service teachers' sensitivity to different cultures differs statistically significantly, rather than the age variable, according to the environment they grew up in, the high school and the department they attended, whether they went abroad or not and whether they had friends from different cultures. The reason for the positive significant difference by age variable could be the experience of the teachers. That is, those with more professional experience were more sensitive than those with less professional experience. The results of the current study and the findings of the studies in the literature showed that the age variable does not lead to a significant difference. Therefore, a person's interest, relevance and sensitivity to a different culture could be related to how much he or she is in communication with that culture or cultures, rather than the age variable.

As a result, there was a positive relationship between cultural intelligence and multiculturalism. Pre-service teachers' cultural intelligence levels have a significant impact on shaping their process of becoming global citizens. Individuals with high cultural intelligence are advantageous in recognizing and understanding different cultures. Again, these people could solve the problems they may encounter more easily (Thomas and Inkson, 2005). People with high cultural intelligence could more easily guide and understand the people they work with. Raising the level of cultural intelligence and using it successfully could be extremely important for world citizenship, as it would create the harmony in intercultural relations (Early & Mosakowski, 2004). Multiculturalism means the art of managing differences. In this respect, high cultural intelligence is crucial in terms of keeping differences together in harmony. People who encounter a new culture have a great advantage if they

know what they would encounter in advance; because they could plan ahead of time how to treat people from different cultures and how to communicate easily with these people.

Implications

In order to increase the notion of global citizenship in pre-service teachers, their tendencies to cultural intelligence should be supported. In particular, increasing the cultural intelligence levels of pre-service teachers would ensure that differences could be lived together peacefully and in harmony. For this purpose, organizations could be made to enable students to meet different cultures. Yet again, abroad educational opportunities could be increased in order to enable students to know and understand different cultures. Seeing and understanding different cultures abroad would make it easier for a person to become a world citizen. Additionally, trainings on cultural intelligence and global citizenship could be facilitated at universities. Although the university period is a late-stage for cultural intelligence and global citizenship awareness, it is significant today that these courses should be added at least as elective courses in all departments and branches. Since university students have completed their personality development to a large extent, it would be too late to provide them with cultural intelligence and global citizenship awareness. Considering the high number of refugees in Turkey, it is predicted that people in different cultures could cause big problems in society.

Therefore, it is of utmost importance that teachers graduating from Faculties of Education with a pedagogical formation should graduate with advanced professional and personal skills for the education of refugee students. For this, pre-service teachers need to be equipped with how to educate the children of refugees. For example, they should have the skills to implement such methods and techniques that are suitable for the modern educational approaches helping students unite, integrate and socialize more. It is also essential that teachers who will work in regions where immigration is intense should receive language training in order to overcome the problems they may experience in the language of refugees.

Particularly, the economic problems in the regions as a result of intense migration, the marriage of immigrant women with Turkish men, and increasing nationalism may cause a negative situation against immigrants. In order to solve all these problems and to keep these differences in harmony, training on cultural intelligence and global citizenship perceptions would become invaluable. Therefore, emphasis should be placed on critical values on respect for differences, empathy and cultural intelligence skills, especially in the context of personality traits. Consequently, in prospective research, further studies could be carried out by including different variables such as respect, empathy, emotional intelligence, etc. to the differences that affect global citizenship.

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International Journal of Progressive Education, Volume 18 Number 4, 2022

The Mediating Role of Resilience in the Relationship between Fear of COVID-19 and Mental Health Continuum during the COVID-19 Pandemic Process*

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Abstract

The general purpose of this study is to determine the mediating role of resilience in the effect of fear of COVID-19 on the mental health continuum. 443 volunteer individuals who experienced the COVID-19 pandemic process in Turkey participated in this study. In data collection, The Fear of COVID-19 Scale, The Brief Resilience Scale and Mental Health Continuum Short Form were used. Data were analyzed with the two-stage Structural Equation Modeling (SEM) technique. The full mediating role of resilience has been proven in the impact of fear of COVID-19 on the mental health continuum.

Keywords: Mental Health Continuum, Mental Health, Resilience, Fear of COVID-19.

DOI: 10.29329/ijpe.2022.459.11

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* This study was presented as an oral presentation at the 4th International Conference on Covid-19 Studies.

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INTRODUCTION

On March 10, 2020, the case of COVID-19 appeared for the first time in Turkey. To deal with this, some preventive steps have been taken from 12 March 2020 (T.C. Sağlık Bakanlığı, 2020a). Arrangements have been made by taking measures for people coming from abroad. The distance education process was initiated by suspending the schools. The places for social activities such as such as libraries, parks, gardens, concerts, sports halls and places of worship were temporarily suspended (T.C. Cumhurbaşkanlığı, 2020c). It was announced on May 4, 2020 that the normalization process will begin gradually (T.C. Cumhurbaşkanlığı, 2020a). As of June 1, 2020, the normalization process has begun by removing travel restrictions, opening day nursery, enabling the work shifts back to normal to return to their normal working hours and opening public areas such as sports facilities, libraries, parks, and gardens (T.C. Cumhurbaşkanlığı, 2020b). Although it was announced that the normalization process would take place gradually as of May 4, 2020, T.R. Health Minister Dr. Fahrettin KOCA explained the importance of staying at home by saying that the motto of the process is "Life fits into home!" (T.C. Sağlık Bakanlığı, 2020b).

The COVID-19 process is a process that affects individuals' both physical and mental health in Turkey, and even if the pandemic ends, its psychological effects were thought to continue (Aşkın et al., 2020). The changing situations across the country, the measures taken and the practices implemented in this process affect the psychological status of individuals (Ekiz et al., 2020). The difficulties of the COVID-19 process and the changes in the living conditions of the individuals also affect individuals.

In the literature, there were studies showing that the COVID-19 process negatively affects the daily routines, mental health and performance of individuals (Arısoy et al., 2020; Cai et al., 2020; Huang & Zhao, 2020; Liu et al., 2020; Mamun & Griffiths, 2020; Mamun & Ullah, 2020; Qiu et al., 2020). In a study on 1715 people in Hong Kong, almost all of the participants stated that they were worried and feared about COVID-19 and their daily routines were disrupted (Kwok et al., 2020). Studies conducted during the COVID-19 process also reveal that there is a fear of COVID-19 (Mertens et al., 2020; Schimmenti et al., 2020). There were studies in the literature that show that the resilience of individuals in the COVID-19 process is an important factor in coping with the COVID-19 process and its effects (Bilge & Bilge, 2020; Çetin & Anuk, 2020; Tönbül, 2020; Yazıcı-Çelebi, 2020). Taking this situation into account, it is very important to know what level of fear of COVID-19 individuals have and to examine their mental health continuum and resilience in order to cope with the factors caused by COVID-19.

Mental Health Continuum and Fear of COVID-19

Mental health means that the individual is in effective harmony and balance with herself or himself and his or her environment (Yüksel-Şahin, 2009). Except this definition, there were also different definitions of it (Eryılmaz & Mutlu, 2016). In psychology, situations are regarded as depression and anxiety have been focused on (Myers and Diener, 1995). However, only 17% of the people in the world; on the other hand, 20% of Turkey is mentally ill. These findings show us that a large part of the society is not in the mentally ill group and is actually neglected. In addition, the definition of health by the World Health Organization is not only the absence of a diseased structure, but also the feeling of well-being physically, socially and psychologically (Demir & Türk, 2020). In line with these explanations and findings, the emergence of an approach that focuses on the strengths of the individual has become inevitable. This approach is positive psychology. In positive psychology, it is emphasized that it is not enough to reduce the psychological discomfort of the individual, but the level of happiness, life satisfaction, well-being should be increased and its development should be supported (Myers & Diener, 1995). In addition, the positive characteristics of individuals are accepted as positive mental health indicators (Seligman & Csikszentmihalyi, 2002). In fact, the mental health continuum is one of the positive indicators in this positive psychology. Mental health continuum is a structure that consists of sub dimensions "emotional flourishing, social flourishing, psychological flourishing" (Keyes & Annas, 2009) and expresses the presence (flourishing) and absence

(languishing) of mental health. While flourishing is associated with high levels of well-being, positive emotions, psychological and social functionality; languishing is associated with low levels of well-being, negative emotions, and inability in life (Keyes, 2002). In a study on 4826 people in China in the COVID-19 process, a positive significant correlation was found between mental health problems and the perceived fear of COVID-19 (Li et al., 2020). A mental health disorder or not having enough information about COVID-19 drives the individual to suicide (Dsouza et al., 2020). In many parts of the world, people have committed suicide due to COVID-19 (Goyal et al., 2020; Mamun & Ullah, 2020). The results of these studies that the mental health continuum of individuals in the process of COVID-19 is important in the way of developing in flourishing.

COVID-19 is a pandemic that limits people's interactions with others (Harper et al., 2020), requires millions of people around the world to stay at home, and has psychosocial consequences (Pakpour & Griffiths, 2020). One of the key themes common to any pandemic is fear (Xiang et al., 2020). Pandemics and measures taken for pandemics can cause fear in individuals (Zhang et al., 2020). The fear of an infectious disease is different from the fear of a degenerative disease (which factors such as trauma and tumors were not effective in its formation, caused by damage to cells). Even if degenerative diseases affect the health of the individual, the individual continues to practice his old habits as they do not pose a serious threat to his survival. The individual's fear of degenerative diseases is. However, the fear of an infectious disease threatens the life of the individual and changes his habits. So fear of infectious disease involves both cognitive processes and social learning. It is also associated with the emotional part of the brain and is an emotional response of the brain to illness (Troisi, 2020). Although seasonal flu, which is also an infectious disease, causes death of more people; the fear of COVID-19 is experienced much more severely than fear of seasonal flu (Asmundson & Taylor, 2020). There is both a fear seen in different ways at every stage of the pandemic and a virus pandemic (Sungur, 2020); because the fear of COVID-19 is due to the fact that the virus is new and there is uncertainty as to how much the current pandemic may deteriorate (Asmundson & Taylor, 2020). Schimmenti et al. (2020) argued that the fear of COVID-19 can be examined in four dimensions: bodily, cognitive, behavioral and interpersonal. In addition to all these, fear of COVID-19 varies according to the variables gender, education level and the country (Reznik et al., 2020). However, in general, with the COVID-19 pandemic , individuals are afraid of being stigmatized by the society, losing their close relationship, staying at home with social isolation and not surviving if they get sick (Ibrahim, 2020). So much so that with the fear of COVID-19, even pregnant women, chemotherapy and dialysis patients refrain from going to the hospital and continuing the treatment process (Navab & Bahramnezhad, 2020). When fear of COVID-19 is very high, it can have harmful effects on the phobia and social anxiety and on the xenophobia; on the other hand, there is an insufficient level of fear, it may still have harmful effects that can harm both the individual and the society (e.g. not following the measures taken to slow the spread of COVID-19) (Mertens et al., 2020). When considered from this point of view, it can be expected that the fear of COVID-19 should be experienced, but this fear should be at a level that enables the individual to take measures to protect both herself/himself and other individuals in society.

Resilience as a Moderator

The individual's mental health, strengths and positive aspects of his mental health status were related to resilience (Connor, 2006). While resilience was an issue that was neglected before 1970's when examining the individual’s function, development, resistance, prevention of psychopathology or getting rid of pathology; it has been one of the important issues dealt with when examining the individual since the 1970s (Masten, 2011). Resilience is for an individual to be able to remain firm in the event of encountering negative experiences (Karaırmak, 2016), to continue his life and to have a intention (İnci & Boztepe, 2013). In other words, resilience is the psychological structure that helps an individual maintain his positive adaptation despite negative experiences (Luthar et al., 2000). An individual with a high level of resilience has a number of protective factors such as autonomy, self-help ability, self-efficacy, impulse control, supportive and strong family structure, positive peer relationships and social connections with others (Fayombo, 2010). Thanks to resilience, the individual can effectively use both his psychological skills and abilities and the social support system such as

family and environment to cope with the difficulties he / she faces (Friborg et al., 2003). In addition, an individual with positive personal characteristics can cope with the changes he encounters by maintaining his psychological health (Kına, 2019). However, when resilience is taken as a personal feature, it may cause perspectives that blame the individual for negative consequences (Vanderbilt-Adrience, 2006). Resilience is not only an innate personality trait of the individual, but also a structure that can be learned and developed over time (Friborg et al., 2003). The pandemic is one of the situations that cause individual to feel vulnerable and at risk due to the uncertainty it causes and makes it difficult to use coping skills (Reznik et al., 2020). The COVID-19 pandemic requires the isolation process. Therefore, an individual who is a part of the society cannot participate in an activity within the framework of a common purpose by getting together with other members of the society as in other disasters. This situation may cause unique and severe strains on the resilience of the individual (Polizzi et al., 2020). Resilience of individuals experiencing sleep problems depending on anxiety due to COVID-19 was found to be significantly low (Yazıcı-Çelebi, 2020). The result of this study is important in terms of showing the stress reaction of the individual according to the resilience level in situations such as anxiety-fear. Bulut (2016) found that individuals who could easily adapt to difficult living conditions and cope with stressful life events had high levels of resilience. As a matter of fact, participants in the study of Tönbül (2020) stated that they felt fear (9.2%) and feelings that could be associated with a sense of fear such as panic (4.1%), anxiety (72.4%) and despair (14.3%). In another study, it was found that there was a significant relationship between the psychological symptoms of individuals and their resilience during the COVID-19 process, and as the resilience of individuals increased, their functional coping levels also increased (Bilge & Bilge, 2020). As a result; in the light of these information and findings stated in the literature, it is thought that it may be important to investigate the mediating effect of resilience in this study.

While there are studies on the mental health of individuals during the COVID-19 process (Belen, 2020; Isralowitz et al., 2020; Qiu et al., 2020; Wang et al., 2020a) in the literature, a model based on the mediation of resilience in the relationship between fear of COVID-19 and mental health continuum work is limited. For this reason, it is thought that this study will contribute by forming an important basis for preventive and remedial studies to be carried out in the future. Within the scope of all this information, the general purpose of this study is to determine the mediating role of resilience in the effect of fear of COVID-19 on mental health continuum during the COVID-19 process. For this general purpose, the hypothetical model created within the framework of the related literature is presented in Figure 1.

(H1) Fear of COVID-19 negatively predicts resilience.

(H2) Fear of COVID-19 negatively predicts mental health continuum.

(H3) Resilience positively predicts mental health continuum.

(H4 Resilience has a mediating effect on the relationship between fear of COVID-19 and mental health continuum.

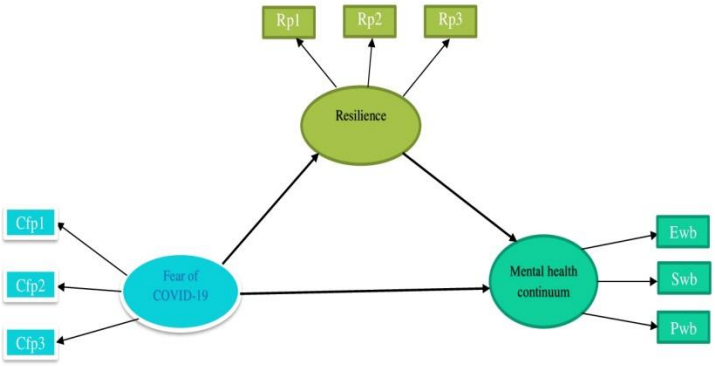

Figure 1. Hypothetical Model

METHODS

Participants

443 volunteer individuals [women 320 (72.2%) and 123 men (27.8%)] who experienced the COVID-19 pandemic process in Turkey participated in this study. Their ages range from 18 to 65. [Age_{Mean} =29.26, Age_{Sd} = 7.80].

Data Collection Tools

Mental Health Continuum Short Form (MHC-SF)

In this study, developed by Keyes et al. (2008), adapted to Turkish by Demirci and Akın (2015) and analyzed for reliability and validity, MHC-SF was used. MHC-SF, has 14 items and three dimensions (emotional flourishing, social flourishing and psychological flourishing). In the study of Demirci and Akın (2015), first level confirmatory factor analysis was used for construct validity and good goodness-of-fit values (x^2/df= 3.26, RMSEA= 0.07, IFI= 0.97, CFI= 0.97, NNFI= 0.96) were confirmed the structure. MHC-SF's item-total score correlations were between .51 and .68. In the study of Demirci and Akın (2015) the internal consistency coefficient was checked from the reliability analysis and .84 for the subscale “emotional flourishing”, .78 for the subscale “social flourishing”, .85 for the subscale “psychological flourishing”, and .90 for the whole scale. In the current study, the internal consistency coefficient for MHC-SF was calculated as .78.

The Brief Resilience Scale (BRS)

In this study, BRS was developed by Smith et al. (2008), it was adapted into Turkish by Doğan (2015) and validity and reliability studies were carried out. BRS is a one-dimensional, six-item. Doğan (2015) used exploratory factor analysis (EFA) and confirmatory factor analysis (CFA) for construct validity, and it was found that BRS had a 54.66% explained variance in the EFA results. In the CFA results, it was determined that the BRS showed good fit values (x^2/df= 1.83, RMSEA= 0.05, IFI= 0.99, CFI= 0.99, NNFI= 0.99). BRS's item-total score correlations between .49 and .66 (Doğan, 2015). In addition, in the study of Doğan (2015) the internal consistency coefficient was determined as 0.83 for BRS. In the current study, the internal consistency coefficient for BRS was detected as .78.

The Fear of COVID-19 Scale (FCS)

In this study, FCS, developed by Ahorsu et al. (2020), it was adapted into Turkish and analyzed for validity and reliability by Satıcı et al. (2020). FCS has a single factor and contains seven items. For construct validity by Satıcı et al. (2020) were used confirmatory factor analysis (CFA) and it was observed that FCS had acceptable goodness-of-fit values (x^2= 299.47, SRMR= 0.06, CFI= 0.91, NFI= 0.91, IFI= 0.91). FCS's item-total score correlations between .50 and .62. In addition, Satıcı et al. (2020) in the reliability analysis of FCS, the internal consistency coefficient was determined 0.84. In the current study, the internal consistency coefficient for FCS was calculated as 0.85.

Data analysis

In this study, normality and multicollinearity assumptions were examined as a preliminary analysis. Then, descriptive statistics and correlations of variables were examined. After the preliminary analysis, the data were analyzed with the two-step Structural Equation Modeling proposed by Kline (2015). First, the measurement model was tested. In the measurement model, it is examined whether the observed variables that make up all the latent variables represent the latent variables significantly. In the second step of the Structural Equation Modeling (SEM), the structural model was tested. In the structural model, the cause-effect relationship networks between latent variables were evaluated (Kline, 2015). At this point, paths were established between variables, the significance of these path coefficients and the model goodness of fit indices (chi-square (χ^2), χ^2 / sd ratio, NFI, CFI,

GFI, AGFI, TLI and RMSEA) were used. $\chi^2/sd \leq 5$; NFI, CFI, GFI, AGFI, TLI $\geq .90$; RMSEA $\leq .09$ the acceptable limit point was determined (MacCallum, Browne & Sugawara, 1996).

In addition, since the fear of COVID-19 scale and the brief resilience scale consisted of one dimension, item parceling was performed depending on the item-total correlation in the Structural Equation Modeling (SEM). The item parceling method contributes to the normal distribution of variables and to increase the reliability of the measurements (Alhija & Wisenbaker, 2006). Accordingly, 3 parcels were assigned for fear of COVID-19 and 3 parcels were assigned for resilience.

In addition, more than one model was tested in mediation test in SEM. To decide which model is preferable, the chi-square difference test based on the nested models strategy was examined. In addition, the model having lower model comparison fit index values (AIC and ECVI) was accepted as the best model (Schermelleh-Engel, Moosbrugger & Müller, 2003).

Finally, the significance of direct and indirect effects was examined by bootstrapping procedure. Accordingly, lower and upper limit confidence intervals in addition to bootstrap coefficient were created by performing 1000 bootstrap (resampling). In order to decide that indirect effects are significant, the lower and upper limit of the confidence intervals should not contain zero as a result of the bootstrapping process (Hayes, 2017).

RESULTS

Preliminary Analysis

In this study, normality and multicollinearity assumptions were examined as preliminary analysis. Normality assumption was evaluated with skewness and kurtosis values. It was observed that the kurtosis values varied between -.77 and .05, and the skewness values varied between -.39 and .74 (Table 1). These values were within the limits of normality assumptions suggested by Tabachnick and Fidell (2007). In addition, the multivariate normality assumption was tested and found to be 7.64. Since this value is within the limits recommended by Kline (2015), multivariate normality assumptions were met in this study.

In addition, the multicollinearity hypothesis was tested with VIF and tolerance values. VIF values were between 2.47 and 2.91, while tolerance values varied between .34 and .40. These values are accepted within the limits suggested by Kline (2015). As a result, the VIF and tolerance values in this study confirmed that there was no multiple linear connection problem.

Table 1. Preliminary Analysis Findings

Variable	1	2	3	4	5	6	7	8	9
(1) Cfp1	1								
(2) Cfp2	.71**	1							
(3) Cfp3	.71**	.70**	1						
(4) Rp1	-.33**	-.36**	-.35**	1					
(5) Rp2	-.23**	-.25**	-.21**	.72**	1				
(6) Rp3	-.30**	-.32**	-.26**	.73**	.76**	1			
(7) Ewb	-.24**	-.26**	-.19**	.43**	.48**	.41**	1		
(8) Swb	-.17**	-.12**	-.12*	.23**	.40**	.34**	.50**	1	
(9) Pwb	-.10*	-.08	-.07	.32**	.47**	.42**	.57**	.69**	1
M	8.42	4.45	4.90	6.46	6.40	6.44	8.34	10.67	18.50
SD	2.80	1.86	1.62	2.04	1.83	1.87	3.51	6.09	7.40
Skewness	.14	.74	.23	-.34	-.17	-.18	-.18	.33	-.39
Kurtosis	-.53	.05	-.09	-.32	-.20	-.06	-.77	-.63	-.74

Notes. *p<.05; *p<.001; Rp1, Rp2, Rp3= Parcels of resilience, Cfp1, Cfp2, Cfp3=Parcels of fear COVID-19.

Pwb: Psychological well-being, Ewb: Emotional well-being, Swb: Social well-being.

The Mediating Effect of Resilience

Testing the Measurement Model

The data were analyzed with two-step structural equation modeling (SEM). The first step, the measurement model, was evaluated. There were three latent variables ("Fear of COVID-19", "Resilience" and "Mental Health Continuum") and nine observed variables in the measurement model.

In the findings of the measurement model, goodness of fit values ($\chi 2$/df (110.102/24) = 4.58, p=.00; RMSEA = .09; CFI = .96; TLI= .94; GFI= .95; AGFI=.90; NFI=.95) is acceptable. (Table 2). In addition, all standardized factors (.674 to .875, p<.001) were statistically significant (Table 3) as another proof that the observed variables represented the latent variables.

Table 2. Goodness of Fit Indices of the Measurement Model

Fit Indices	Values
X^2/ sd (110.102/24)	4.58
RMSEA (90% confidence interval = 0.07; 0.10)	.09
NFI	.95
CFI	.96
GFI	.95
TLI	.94
AGFI	.90

Table 3. The Measurement Model (Factor Loadings, Standard Errors, t-Values, and R^2)

Measure and variable	Unstandardized Factor Loadings	SE	Standardized Factor Loadings	t	R^2
Fear of COVID-19					
Cfp1	1.773	0.089	0.855	19.931*	0.731
Cfp2	1.157	0.059	0.841	19.674*	0.707
Cfp3	1.000	-	0.835	-	0.697
Resilience					
Rp1	1.046	0.048	0.837	21.845*	0.701
Rp2	0.975	0.042	0.872	23.042*	0.761
Rp3	1.000	-	0.875	-	0.766
Mental Health Continuum					
Ewb	0.366	0.026	0.674	14.070*	0.455
Swb	0.727	0.046	0.772	15.872*	0.596
Pwb	1.000	-	0.875	-	0.765

Notes. All *t* values were significant. *p<.001; SE: Standard Error; Rp1, Rp2, Rp3= Parcels of resilience, Cfp1, Cfp2, Cfp3=Parcels of fear COVID-19. Pwb: Psychological well-being, Ewb: Emotional well-being, Swb: Social well-being.

Table 1. (Measurement Model) Bivariate Correlations among Latent Variables

Latent variables	1	2	3
Fear of COVID-19	-		
Resilience	-.40*	-	
Mental Health Continuum	-.19*	.57*	-

*p<.01

Testing the structural model

After the measurement model was verified, the structural model was tested. At this point, in the first structural model to reveal the relationships between fear of COVID-19, resilience and mental health continuum, the model in which resilience is the full mediator between fear of COVID-19 and mental health continuum was tested. In the full mediation model, a path was not established between the fear of COVID-19 and mental health continuum, and it was examined that the fear of COVID-19

predicted mental health continuum through resilience. When the model in which resilience is the full mediator was tested, it was seen that the results of goodness of fit indices were at an acceptable level (χ^2/df (110.642/25) = 4.42, p=.00; NFI=.95; GFI= .95; CFI = .96; TLI= .95; AGFI=.90; RMSEA = .08 (90% confidence interval for RMSEA = .07–.10). In the second structural model, the model in which resilience is a partial mediator between fear of COVID-19 and mental health continuum was tested. In the partial mediation model, the direct path from the fear of COVID-19 to the mental health continuum was been added. When the model in which resilience was a partial mediator was tested, it was seen that the results of goodness of fit indices were at an acceptable level (χ^2/df (110.102/24) = 4.58, p=.00; NFI=.95; GFI= .95; CFI = .96; TLI= .94; AGFI=.90; RMSEA = .09 (90% confidence interval for RMSEA = .07–.10), but the direct path from the fear of COVID-19 to mental health continuum was found to be insignificant (β = .04, p > .05).

Deciding whether resilience is fully mediator or partial mediator was evaluated with the chi-square difference test based on the nested models strategy. In the chi-square difference test findings, it was observed that the direct path added between fear of COVID-19 and mental health continuum did not significantly contribute to the model ($\Delta\chi 2$ = 0.54, sd = 1, p > .05). Therefore, the model in which resilience was the full mediator was preferred. Additionally, considering model comparison fit indices, since the values of the full intermediary model (AIC = 150.642; ECVI = 0.341) were lower than the values of the partial intermediary model (AIC = 152.102; ECVI = 0.344), it was determined that the full intermediary model is preferable.

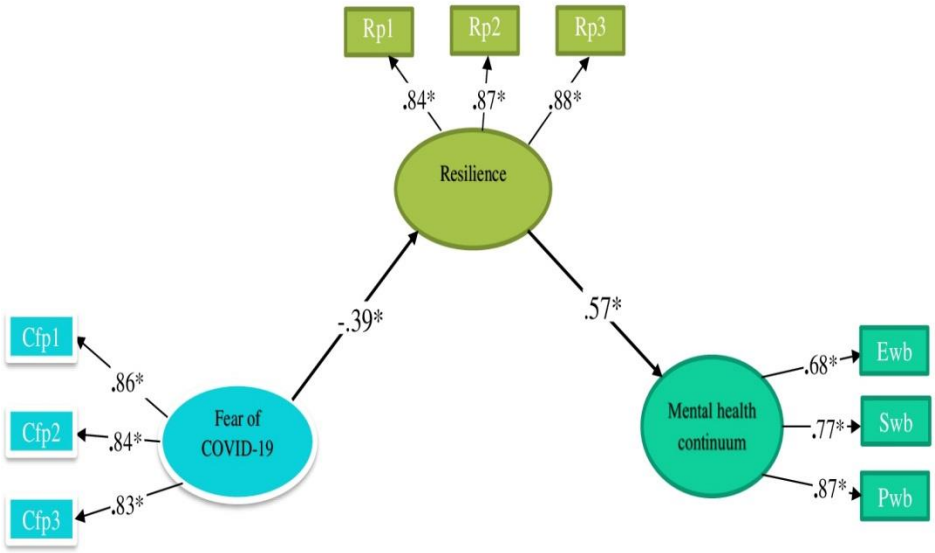

Figure 2. The Fully Mediating Role of Resilience

Notes. *p<.001; Rp1, Rp2, Rp3= Parcels of resilience, Cfp1, Cfp2, Cfp3=Parcels of fear COVID-19.

Pwb: Psychological well-being, Ewb: Emotional well-being, Swb: Social well-being.

Significance of Indirect Effects – Bootstrapping

A bootstrapping analysis was conducted to find further supporting evidence for the full mediating effect of resilience (Table 5).

Table 2. Bootstrapping Process of Fully Intermediate Model

Model pathway	Bootstrap values (β)	SE	Bias %95CI Lower	Upper
Direct effect				
Fear of COVID-19 → Resilience	-.39	.05	-.48	-.27
Resilience → Mental Health Continuum	.57	.05	.46	.65
Indirect effect				
Fear of COVID-19 → Resilience → Mental Health Continuum	-.22	.03	-.29	-.15

Note. Bootstrap is based on 1,000 resamples (Hayes, 2017). β =Standardized coefficients. *p<.05.

When the bootstrapping coefficients presented in Table 5 and the confidence intervals of these coefficients were examined, it was seen that the direct paths were significant. It has also been found that the path which the indirect effect of the fear of COVID-19 on mental health continuum was also significant (b = -.22, 95% CI= -.29, -.15).

DISCUSSION

On the one hand, pandemic is real fear focus that threatens life and needs to be feared; on the other hand, it is a structure that prevents the spread of the virus by activating behaviors such as maintaining the necessary social distance, ensuring hygiene, staying at home in the process of COVID-19 (Sungur, 2020). Fear of COVID-19 can be considered as a central structure in explaining both the individual and social consequences of the pandemic process (Mertens et al., 2020). Concordantly, fear of COVID-19 is a factor that has an impact on the mental health of individuals (Fegert et al., 2020). Mental health is considered within the mental health continuum as a biopsychosocial situation (Keyes & Grzywacz, 2005). Mental health continuum is a structure that consists of sub-dimensions "emotional flourishing, social flourishing, psychological flourishing" (Keyes & Annas, 2009), and expresses the presence (flourishing) and absence (languishing) of mental health. The individual's mental health, strengths and positive aspects of his mental health status were related to resilience (Connor, 2006). The concept of resilience, is the ability of the individual to remain strong (Karaırmak, 2016), to continue his life and to have a purpose in case of encountering negative experiences (İnci & Boztepe, 2013). In other words, resilience is the psychological structure that helps an individual maintain his positive adaptation despite his negative experiences (Luthar et al., 2000).

The results of this study, the mediating role of resilience has been proven in the impact of fear of COVID-19 on the mental health continuum. According to Mertens et al. (2020), an individual who experiences an intense fear of COVID-19 may experience various mental health problems. In addition, an individual who has negative emotions such as fear during the COVID-19 pandemic process may face mental health problems by experiencing learned helplessness, thinking that his fate is not in his own hands (Shaw, 2020). The COVID-19 pandemic triggered psychological problems such as depression, panic disorder, and anxiety (Qiu et al., 2020). In the study that investigated whether healthcare workers had psychosocial problems during the COVID-19 process, it was observed that anxiety, depression, and obsessive-compulsive symptoms were higher in healthcare workers, especially those who were in direct contact with the patient (Zhang et al., 2020). In another study conducted with university students in China, it was found that people participating in the study experienced anxiety, depression and high levels of stress in relation to the COVID-19 process (Wang et al., 2020a). In a longitudinal study conducted with 1738 people in China, a questionnaire was applied twice to examine the mental health of individuals. Comparing the results of the surveys conducted twice, while no significant change was observed in the stress, anxiety and depression scores of the individuals in the first and the second questionnaire, it was observed that there was a significant decrease in post-traumatic stress disorder scores (Wang et al., 2020b). The study conducted with 7143 undergraduate students studying at China Changzhi Medical Faculty reveals that approximately 24.9% of the students experience anxiety-fear due to the COVID-19 pandemic (Cao et al., 2020). The literature also reveals the relationship between fear of COVID-19 and mental health

(Belen, 2020; Gritsenko et al., 2020; Isralowitz et al., 2020; Kwok et al., 2020; Mamun & Ullah, 2020; Yehudai et al., 2020; Zolotov et al., 2020). Within the scope of all these studies in the literature, it can be said that the COVID-19 process affects the mental health of individuals. In addition, especially considering that there is a relationship between the fear of COVID-19 and mental health, it is important for individuals to effectively deal with the fear of COVID-19 during the COVID-19 pandemic to protect their mental health.

Individuals may encounter traumatic life events at various stages of their life and each individual is affected by these difficult life events in different ways (American Psychological Assosiation, 2012). The stress and traumatic experiences faced by the individual affect the life balance and order (Kayacı & Özbay, 2016). The COVID-19 process is one of the traumatic life events faced by the individual, too. Resilience is also one of the concepts associated with the negative experiences of the individual throughout his life (Kına, 2019). An individual with high resilience adapts more easily to difficult life events that deeply affect his life and can cope more effectively with the stressful situation that occurs (American Psychological Assosiation, 2012). In addition, resilience may refer to the state of flourishing achieved by an individual at risk, or the characteristics and mechanisms by which this flourishing state is achieved (Ungar, 2004). Thanks to resilience, the individual begins to recover and adapt to his new life after traumatic experiences (Çam et al., 2014). There were studies in the literature that reveal the relationship between resilience and mental health (Bilge & Bilge, 2020; Naem et al., 2020; Yazıcı-Çelebi, 2020), show that the resilience of individuals in the COVID-19 process is an important factor in coping with the COVID-19 process. Also there were studies (Albott et al., 2020; Çetin & Anuk, 2020; Tönbül, 2020; Yıldırım et al., 2020) in the literature that reveals the meaningful and negative correlations between fear of COVID-19 and resilience. These literature findings support the findings of the present study. It can be interpretable that resilience is an important contributor to individuals' ability to effectively deal with a fear of COVID-19.

CONCLUSION

Throughout history, people have faced numerous mass traumas. In these traumatic events, it has been observed that individuals have some problems related to their mental health (Polizzi et al., 2020). The COVID-19 pandemic is also an important event, like other mass traumas that people have faced throughout history. The COVID-19 pandemic is a dangerous risk factor for mental health continuum. The reorganization of the life of the individual, the death of relatives, the weakening of social support systems, restriction of access to health services and economic conditions are factors affecting the mental health of the individual (Fegert et al., 2020). In addition, it is known that the changes in mental health of individuals exposed to traumatic events were affected by the ways they were supported before, during and after the traumatic event. Individuals who have to deal with a traumatic event experience post-traumatic growth along with resilience (Greenberg et al., 2020). From this point of view, it is important to strengthen the resilience to protect the mental health of individuals during the COVID-19 pandemic (Polizzi et al., 2020). In this process, mental health professionals can intervene to help individuals deal with the fear of COVID-19 (Zhang et al., 2020). For example, in Singapore during the COVID-19 pandemic necessary arrangements have been made for mental health professionals to provide psychological counseling services in order to protect the mental health of individuals and to strengthen their resilience (Ho et al., 2020).

Individuals can commit suicide as a negative reaction in pandemic, in relation to their mental health conditions (Devitt, 2020). In particular, mental health disorders or not having enough information about COVID-19 is one of the main reasons that lead the individual to commit suicide (Dsouza et al., 2020). The way to prevent mental health disorders with more advanced psychopathology such as depression, anxiety and suicide is to address the uncertainties and fears associated with the fear of COVID-19 through preventive mental health counseling (Xiang et al., 2020). In addition, in order to prevent or reduce problematic behaviors such as substance use, domestic violence and crime that may occur as a result of the fear of COVID-19, mental health professionals can be trained online and informed about the interventions they can take (Reznik et al. 2020). Especially healthcare professionals were even known to have resilience, they were at the

forefront of the COVID-19 process. So, their mental health is negatively affected. It is also important to provide psychological support to healthcare professionals in order to cope more effectively with the pandemic process globally (Santarone et al., 2020). To sum up, mental health professionals can provide psychological counseling services to healthcare professionals, people diagnosed with COVID-19, COVID-19 patients and their relatives, and every individual affected by COVID-19 uncertainty in a multidisciplinary manner (Xiang et al., 2020). Finally, social media platforms, television channels and especially news media, news portals, etc. can take measures to improve the mental health continuum of individuals in combating the negative situations caused by COVID-19 (Dsouza et al., 2020).

In this study, resilience as a protective factor affecting the mental health continuum of individuals and fear of COVID-19 as an inhibiting factor, and the causal relationships between these variables were revealed by quantitative study method. In future study, qualitative study can be conducted to examine the aforementioned protective and inhibitory factors that affect the mental health continuum of individuals in more depth. In addition, in the future, when researchers plan experimental study for the protection of individuals' mental health continuum, they can use the dimensions obtained in this study in their experimental programs.

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International Journal of Progressive Education, Volume 18 Number 4, 2022

Development of the General Teaching Principles Scale

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Abstract

The aim of this study is to develop a scale to determine how often secondary school teachers adhere to general teaching principles. For this purpose, 211 teachers who work in secondary education institutions in Yunus Emre District of Manisa Province were included in the research group with the stratified sampling method. The 54-item experimental form of the scale was subjected to expert opinion, and as a result of the analysis, a 50 -item candidate scale was created. In order to determine the construct validity of the General Teaching Principles Scale, Exploratory Factor Analysis (EFA) was performed using the geominQ rotation method. Cronbach's Alpha coefficient was calculated for the reliability index and Confirmatory Factor Analysis (CFA) was performed to test the accuracy of the structure revealed by EFA. SPSS 26.0 software was used for reliability analysis, Jasp 0.13.1 for Exploratory Factor Analysis and R Studio 1.2.5033 software for Confirmatory Factor Analysis. The results of the validity and reliability studies conducted on teachers working in secondary education show that this developed scale gives valid and reliable results.

Keywords: General Teaching Principles, Scale Development. Academic Achievement

DOI: 10.29329/ijpe.2022.459.12

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INTRODUCTION

Taking into account the stunning pace of production and dissemination of information, a period is being passed in which those who have invested enough, especially in education, can survive. According to Kayadibi (2001), this period is a period in which quality production and services are carefully investigated in order to index them to the different and ever-changing consumer preferences. It is believed that the quality of production and services has improved spontaneously over time, and for this purpose, the importance of continuous assurance of human quality has been emphasized with the education reform in parallel with the changing world.

It is clear that the way to eliminate this need, which has been emphasized, in accordance with the requirements of the era, is to improve the quality of the educational service that countries provide to their citizens. The improvement of the education system is of great importance in achieving the desired quality. If the goal is to create behavior in the desired direction, then the system is a lively whole consisting of various suitable elements for achieving certain goals (Sönmez, 2011). The degree and level of achievement of goals can be considered evidence of the degree to which the system is effective, efficient and consistent.

The part of the educational process that is carried out in schools and similar controlled environments within the specified time frame is considered to be teaching. It is directly related to the quality of the teaching service provided in the acquisition of program outcomes by students. One of the most important pillars of the teaching process is undoubtedly the teachers. At this point, it is possible to say that the quality of teaching is shaped by the quality of the teacher. The educational requirements of the age, the new meanings assigned to the teacher, the differentiated needs of the students, the new approaches to the education of the individual impose new responsibilities on the teacher in a professional sense. In this context, teaching is considered as a profession that can bear the responsibility of human life in its entirety and requires high qualifications.

It is clear that teacher quality is explained by the concept of competence and that these competencies are one of the most important determinants of creating desired behaviors in students. The general competencies of the teacher profession, which are determined by many stakeholders in Turkey and accepted as a result of the analysis of the studies of international organizations on the subject, are discussed in three main headings. The first of these is professional knowledge, the other is professional skills, and the last is attitudes and values. Within the scope of these general competencies mentioned, the professional skill area is the competence area on which this study focuses. The professional skills competence area covers the sub-fields of planning the educational environment, creating learning environments, managing the teaching learning process and measuring assessment (öyggm, 2017).

All sub-fields that make up the professional skill competence area directly affect the quality of the teaching service. Carrying out such important planning, implementation and evaluation activities in line with certain principles plays an important role in achieving the targeted success. In other words, providing the teaching service within the framework of certain principles serves to ensure that the time, money and effort spent in this process is not wasted, and thus to achieve the desired results.

According to Ergün and Özdaş (1997), the principles that must be constantly taken into account during teaching and that are not allowed to do opposite work are called teaching principles. The principles also affect the choice of subject and method. In order to achieve success in teaching, it is necessary to comply with some principles in these activities as well as using appropriate methods. The teaching principles guide teachers both in their pre-lesson preparation and in the selection of methods and techniques that they apply during their lessons, as well as in the design of the teaching environments that they create. In other words, teaching principles are also used in the selection of course topics and writing textbooks for various courses in a teaching system, and in teaching that course by teachers in classrooms.

Especially when the non-Turkish literature is examined, it is seen that there are different teaching principles stated by different authors for different fields. For example, according to Loughran (1997), the principles to be followed in teaching are building relationships, trust, independence, relevance, reflection and risk taking; while according to Graham, Cagiltay, Lim, Craner, and Duffy (2001), the principles required for higher quality teaching services are stated as increasing teacher-student communication, ensuring cooperative learning, ensuring participation, providing immediate feedback, giving importance to homework, managing high expectations, respecting different abilities and learning styles. On the other hand, Smittle (2003) states that in order to make teaching more effective, some principles must be strictly followed. These principles are listed as increasing students' readiness, choosing methods according to their learning styles, preparing open and sensitive teaching environments, setting high standards, and providing in-service training. According to Perkins (2010), who deals with the teaching process with a game analogy, principles such as seeing the teaching (game) as a whole, making the game worth playing, playing the difficult parts, combining the game with different games, finding the hidden game, learning in the team and teaching the game should be included in the process. On the other hand, Astleitner (2005) stated the principles that a well-planned teaching should be based on as follows: Multiple support of cognitive, motivational and emotional characteristics, consideration of students' strengths, supportive evaluation, gaining incentive argumentation skills, directing self-controlled learning, arousing and maintaining interest, increasing positive feelings and reducing negative ones.

When the literature in Turkey is examined, it is seen that more similar definitions are found about the teaching principles. These principles, which are collected under the umbrella of general teaching principles, are almost in consensus. As Köksal (2016), Gökalp (2016), Duman (2019), Arı (2018) Güven ve Özerbaş (2016), Demerel (2012), Yıldızlar (2018) ve Taşpınar (2017) reveals, the general teaching principles are as follows: relevance to the child, openness, from easy to difficult, activity, from the known to the unknown, economy, from near to far, from concrete to abstract, integrity and closeness to life. Although some principles derived from the above-mentioned principles are encountered in some sources outside the field, the principles gathered under the heading of general teaching principles are accepted as listed above.

Although they are discussed under different names, these principles are described as road maps that teachers must follow in order to increase the quality of education and training services, and therefore for the success of the programs prepared by spending great effort and financial resources. It is clear that teachers who apply these principles, which are rooted in developmental and learning psychology, in their classrooms will increase the quality of education.

Considering the studies conducted in Turkey on general teaching principles, which are thought to directly affect the quality of education and teaching, it is seen that they are generally considered as chapters in academic books named teaching principles and methods. However, the quantitative insufficiency of scientific studies, especially focusing on the general principles of teaching, addressing their importance and indicators, is noticeable. Etem (2020)'s work titled The Compass of Teacher, Kaya (2011)'s work Examination and Evaluation of English and Turkish Coursebooks Which are Used for Foreign Language Teaching at TÖMER in Terms of Past Tense Teaching Principles and Karaca (2020)'s studies on the evaluation of the compatibility of some literary works with general teaching principles can be counted.

As a result of the literature review, no scale for compliance with general teaching principles has been found that can enable teachers to comment on the quality of the teaching service they provide. Therefore, the main purpose of the study is to develop this adaptation scale, which is considered to fill this gap in the field relatively well.

METHOD

The stages of the ”Adaptation to Teaching Principles Scale" development work and the characteristics of the research group are presented below.

Model of the Research

The ”Adaptation to Teaching Principles Scale" development study is a descriptive study in the screening model. Such studies can be observed, measured and analyzed independently of the researcher and objectively (Büyüköztürk, Çakmak, Akgün, Karadeniz, & Demirel, 2013). Quantitative research methods are divided into screening and trial models. According to Şimşek (2012), screening models show reality as it exists (Karasar, 2012).

Research Group

While determining the research group of the study, secondary education institutions in Yunus Emre District of Manisa Province were determined and it was determined that there were 900 teachers working in the relevant institutions in the 2019 – 2020 academic year.

The research is carried out through a sample representing the entire universe or the universe (Karasar, 2012). In this context, as stated by Şahin (2012), one of the 1906 pre-service teachers registered in the MCBÜ Faculty of Education, which constitutes the research universe, in the spring term of the 2018 - 2019 academic year, considering the 95% reliability level and the 5% margin of error, 364 pre-service teachers were reached through stratified sampling, first by department and then by gender, as shown in Table 1.

Development of the Scale

In the first stage of scale development, general teaching principles were determined by examining the literature. Subsequently, a 54-item item pool was created. In the pool, care was taken to write more than one item for each teaching principle.

The prepared 54-item experimental form was submitted to the opinion of 7 experts from Educational Sciences, 2 experts from Psychology and 2 experts from the field of Language, who were knowledgeable in the subject area and were informed about the study subject, in order to receive expert opinions. Candidate scale was tried to be created with the help of feedback from experts. In order to obtain the opinions of the experts, a 3-point Likert scale was used. In the prepared form, experts were expected to select one of the options “suitable”, “partially suitable” and “not suitable” for each item. By combining all the expert forms into a single form, it was determined how many experts approved the possible options for each item. As a result of the feedback from the experts, 4 items were removed from the scale, the statements in some items were corrected and a new 50-item form was created.

Collection of Data

The created form was sent to the teachers by an explanatory e-mail containing information about the research and an internet address was given to them to participate in the study. Teachers who agreed to participate in the study completed the scale through this address.

Analysis of the Data

In accordance with the responses received from a total of 211 teachers who agreed to participate in the study, validity and reliability studies of the scale were conducted. Within the scope of the research, the data size that was considered necessary for factor analysis was examined and the size of the study group was considered sufficient (Tabachnick & Fidell, 2001). In order to determine the structural validity of the ”Adaptation to Teaching Principles Scale", exploratory factor analysis (EFA) was performed using the geominQ rotation method. In the analysis, factor loads were determined as at least 30 (Büyüköztürk, 2006). The Cronbach Alpha coefficient was calculated for the

reliability index of the scale. In addition, confirmatory factor analysis (CFA) was performed to test the accuracy of the structure revealed by EFA. SPSS 26.0 for reliability analysis, Jasp 0.13.1 for exploratory factor analysis and R Studio 1.2.5033 software for confirmatory factor analysis were used in data analysis.

Findings and Comments

Descriptive Statistics of the Research Group

The demographic variables of the teachers participating are presented in Table 1 below.

Table 1. Distribution of teachers participating in the study by gender

Gender	Frequency	Percent
Male	67	31,8
Female	144	68,2
Total	211	100

When Table 1 is examined, it is seen that 67 (31.8%) of the research group are male and 144 (68.2%) are female teachers. The branch distribution of the teachers participating in the research is given in Table 2 below.

Table 2. Distribution of teachers participating in the study by branch

Department	Frequency	Percent
Geography	39	18,5
History	32	15,2
Physics	30	14,2
Math	65	30,8
Literature	21	10
Chemistry	24	11,3
Total	211	100

39 (18.5%) of the teachers in the research group are in the Geography, 32 (15.2%) in History, 30 (14.2%) in Physics, 65 (30.8%) in Math, 21 (10%) in Literature and 24 (11.3%) in Chemistry branches.

The Cronbach Alpha reliability index of the 51-item “Adaptation to Teaching Principles Scale” was calculated as 0.971. The fact that this value is above 0.70 means that the reliability value of a scale is acceptable. The calculated reliability value can be interpreted as the fact that the reliability value of the "Adaptation to Teaching Principles Scale" is quite high.

Exploratory Factor Analysis Results

In factor analysis, the adequacy of the sample size and its suitability for factor analysis was evaluated by using the Kaiser-Meyer-Olkin (KMO) value and the Bartlett test of Sphericity sphericity test. The fact that the KMO value of the scale is 0.929 indicates that the sample size is sufficient. The result of the sphericity test, which was performed to test whether the data came from multiple normal distributions, was found to be statistically significant ($p<0.05$). These obtained values mean that the data in question meet the assumptions required for exploratory factor analysis.

When Table 3 is examined, it is seen that item factor loads vary between 0.336 and 0.811. However, when the item factor loads are examined in detail, it is seen that the factor loads of 5 items are below 0.5 and 46 items are above 0.5. In addition, it was found that the scale consisting of 51 items explains 44.7% of the total variance.

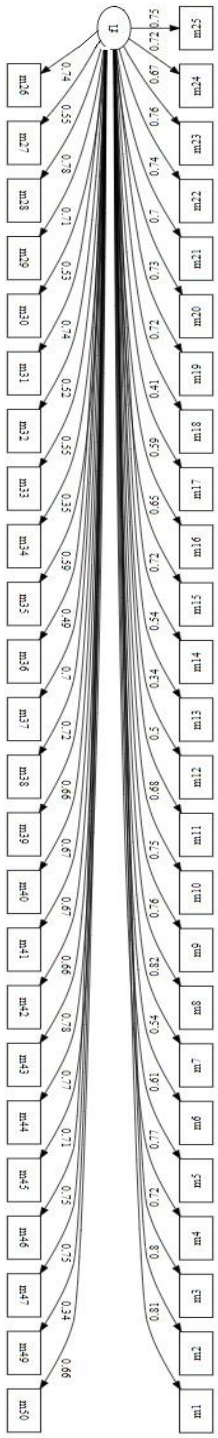
Confirmatory Factor Analysis Results

It was examined whether the model formed as a result of the exploratory factor analysis was confirmed in the confirmatory factor analysis with the same factor loads and it was determined that the RMSEA value, one of the most reliable fit indices, was 0.074. The fact that this value is below 0.08 means that it is an acceptable fit, that is, the model has been verified.

Table 3 below shows the distribution of item factor loads resulting from exploratory factor analysis and the model obtained at the end of confirmatory factor analysis.

Table 3 Item factor loads resulting from exploratory factor analysis and the model resulting from confirmatory factor analysis.

Item	Factor 1
m1	0.811
m2	0.795
m3	0.720
m4	0.772
m5	0.613
m6	0.536
m7	0.822
m8	0.763
m9	0.746
m10	0.685
m11	0.498
m12	0.342
m13	0.542
m14	0.722
m15	0.649
m16	0.594
m17	0.413
m18	0.720
m19	0.728
m20	0.701
m21	0.739
m22	0.756
m23	0.671
m24	0.715
m25	0.751
m26	0.744
m27	0.552
m28	0.779
m29	0.712
m30	0.534
m31	0.743
m32	0.523
m33	0.550
m34	0.352
m35	0.594
m36	0.486
m37	0.705
m38	0.716
m39	0.664
m40	0.671
m41	0.668
m42	0.663
m43	0.781
m44	0.766
m45	0.707
m46	0.748
m47	0.750
m49	0.336
m50	0.660



CONCLUSION AND DISCUSSION

The aim of this study is to develop a scale to determine teachers' compliance with general teaching principles. In the development of the scale, all the necessary operations were performed to develop a Likert-type scale. In the first stage of the study, 54 items were created showing compliance with the teaching principles. The suitability of the items in the first form was checked by taking the opinions of 11 subject field experts. Field experts gave their opinions with the help of a triple Likert-type scale consisting of "suitable", "partially suitable" and "not suitable" options for each item. As a result of the feedback from field experts, some items were corrected, 4 items were removed from the scale and a new 50-item form was created and applied. Studies conducted to develop the scale have shown that the scale of compliance with teaching principles consists of 51 items and is a valid and reliable scale. The exploratory and confirmatory factor analysis performed to determine the construct validity of the scale reveals that the scale is one-dimensional.

According to the EFA results (Hayton, Allen, & Scarpello, 2004; Hurley, Scandura, Schriesheim, Brannick, Seers et al., 1997), which help to explain the existing structure, it is seen that the item factor loads vary between 0.336 and 0.811. The finding that the factor load of 5 items is below 0.5 and 46 items is above 0.5 brings the result that the items in the scale serve the purpose of the scale. In addition, it was determined that the scale of compliance with general teaching principles explained 44.7% of the total variance, and it was concluded that this value was at the desired level.

According to the results of the confirmatory factor analysis carried out to test the validity of the scale, it was seen that the scale of compliance with teaching principles, consisting of 51 items and a single dimension, had sufficient suitability for the model. The RMSEA value, which is one of the most reliable fit indices, was determined to be 0.074, and it was concluded that this value being below 0.08 was an acceptable fit, that is, the model was confirmed. For RMSEA, there are statements that values below 0.05 indicate good fit, and values between 0.05 and 0.10 indicate acceptable fit (Çokluk et al., 2010; Schermelleh et al., 2003; Yılmaz and Çelik 2009).

On the other hand, the Cronbach's alpha internal consistency coefficient of the 51-item scale was found to be (= 0.97).α The obtained value was also expressed as “high reliability” by Alpar (2010: 350). It was concluded that the internal consistency coefficient value of the scale was between 0.80 and 1.00, which is an important finding and the reliability value of the "Adaptation to Teaching Principles Scale" was quite high.

It is thought that the one-dimensional structure of the scale of adaptation to teaching principles is consistent with the conceptual framework of teaching. Due to this theoretical consistency, it is thought that this structure of the scale should be preserved.

This scale is a scale that teachers can benefit from in terms of increasing the teaching performance of teachers and thus achieving more successful results in achieving the goals of teaching. Türel and Yıldırım (2018) underline the positive effects of the process and materials created in accordance with general teaching principles on the academic success of students. Similarly, Gagne, Wager, and Golas (2007) and Brown (2016) pointed to the principles to be followed in the teaching process and stated that compliance with these principles is important for students' academic success. For this reason, it is thought by the researchers that this scale can be used while teachers are preparing their lesson plans, applying them and evaluating the process, and examining the relationship between the quality of teaching service and compliance with general teaching principles will contribute to the literature.

As a result, the findings obtained as a result of the validity and reliability study carried out in secondary education institutions revealed that the scale has sufficient validity and reliability to measure the importance of teaching quality and teaching principles.

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International Journal of Progressive Education, Volume 18 Number 4, 2022

A Study on the Relationship Between Secondary School Students' Digital Game Addiction Awareness and Participation Motivation to Physical Activity

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Abstract

This study is conducted so as to investigate the relationship between secondary school students` digital game awarenees(SDGA) and participation motivation to physical activity (PMPA). 456 female and 241 male secondary school students studying in the Keçiören district of Ankara participated voluntarily. Personel information form, Digital Game Addiction Awareness Scale(DGAAS) developed by Tekkurşun-Demir ve Cicioğlu (2020) and Participation motivation to physical activity Scale(PMPAS) developed by Tekkurşun-Demir ve Cicioğlu (2018) are employed as data collection set. In the analysis of the data obtained, mean($\bar{x}$), standart deviation(sd), percentage(%) and frequency(n) values are utiSecondary Schoold. The pearson product-moment correlation coefficient in pearson correlation analysis, ANOVA in one-way analysis of variance and T-Test in unrelated samples were used. While statistically significant differences were found the relationship between secondary school students' PMPA, SDGA and gender, educational level of father and daily technology usage($p<0,05$), the relationship with gender and educational level of mother was trivial ($p<0,05$); In sum, study results demonstrate that there is a positive and significant relationship between PMPA of secondary school students and the SDGA. In other words, as students' awareness of digital game addiction increases, participation motivation to physical activity increase.

Keywords: Physical Activity(PA), Digital Game(DG), Awareness, Motivation

DOI: 10.29329/ijpe.2022.459.13

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INTRODUCTION

The game is a biological activity that enable people as well as animals to recognize their environment or to better adapt to the environment (Brown, 2014), and it is vital in terms of socilatization during the growing up period (Son vd., 2007; Vygotsky, 2004; Yarnal, 2006; Yarnal ve vd., 2008). Considering today conditions, it is known that game considerably changed. Moreover, it has turned into a system where significantly affecting the people, played digitally, and controlled through the commands (Juul, 2005; Adams ve Dormans 2012). The purpose of the digital game is to fulfill various responsibilities, overtop against rivals , and to measure the performance of the players according to various criteria participating in the game (Adams and Dormans 2012; Adams 2014). According to studies conducted in both Turkey and other countries, it is known that the majority of adolescent girls (97%) and adolescent boys (99%) ranged 12-17 play various digital games (Vandewater vd., 2014).

Physical activity simply is to comsume energy due to several body movements (Zorba, 2013) and one of the most important actions that positively affect the health of individuals. As Edwards and Thouros stated (2006) PA makes significant contributions to the physical development of children and young people. In other words, making physical activity a habit play a critical role for the surfacing of healthy lifestyles in individuals, especially for youth and children. (Tatar ve Myers, 2010). Turkey Nutrition and Health Survey demonsrate that while 12-14 age groups, the rate of those who do not engage in physical activity was 41.4% and 15-18 was %41.6, this rate increased up to 69.5% for 19-30 age group (Ministry of Health, 2014a).

Awareness is an intangible concept that change from one individual to other. The experiences of the person is only a perception that belongs to themselves and reflects the inner world of people. It is an internal and external phenomenon that emerges in the experiences of the person who directs people to real life (Brown ve Ryan, 2003). In this context, İlhan ve Esentürk (2015) describe the awareness as the ability to make sense of one's life, to know the existence of various situations, and to prioritize important events that they value.

Motivation is an internal impact that creates an impulse towards certain goals and directs the person to the goal. It lead to the person feel positive emotionally as people reach the goal (Demir & Cicioğlu, 2018). It is also safe to say that motivation has impact on participation to physical activity and digital game addiction. In this context, scholars argue that people can determine what purpose they focus on and what behaviors they need to exhibit to achieve it thanks to internal and external motivation (Bandura, 1997; Eccles vd., 1998).

Digital games allow people to organize activities together, strive for a common goal, communicate with each other and relieve stress regardless of the distance between them. It is frequently stated that digital technologies increase the sedentary life and the risk of obesity. However, researchers claim that technology can also be used as a tool to increase physical activity (Hakala et al., 2017). Which is why, we claim that integration of digital games and physical activities can make people physically more active and mental health. The main purpose of this study is to determine the level of secondary school students' awareness of digital game addiction and their motivation to participate in physical activity, whether there is a relationship between the demografic information and physical activity level.

METHOD

In this section, the research model, research group, data collection tools and data analysis are presented.

Model of the Research

Descriptive survey model is employed. The survey model is a method that is carried out on the whole of the research group or a sample group in order to reach a general judgment and aims to determine the change and relationship between the variables. (Karasar, 2017).

Research Group

697 secondary school students studying in Keçiören district of Ankara province voluntarily participated in the research in the 2020-2021 academic year. The demographic information of participants is given in Table 1.

Table 1. Frequency and Percentage Distributions of Students

Özellikler	Category	*f*	%
Gender	Girl	456	65,4
	Boy	241	34,6
Age	Early Adolescence	77	11,0
	Middle Adolescence	593	85,1
	Late Adolescence	27	3,9
Mothers` Education Statu	Primary/Secondary	306	43,9
	High School	267	38,3
	Higher Education	124	17,8
Fathers` Education Statu	Primary/Secondary	239	34,3
	High School	284	40,7
	Higher Education	174	25,0
Daily Technology Use Time	4 hour and less	246	35,3
	Over 4 hours	451	64,7
Regular Physical Activity Status	Yes	361	51,8
	No	336	48,2
Total		697	100

In the study, is is investigated the longness of daily technology usage and whether they do regular physical activity of secondary school students. More than half (64,7%) of participants uses technology more than 4 hours a day. There is trivial difference between the participants who do regular activities and those who do not (51,8% vs 48,2%).

Data Collection Tools

Digital Game Addiction Awareness Scale(DGAAS) developed by Tekkurşun-Demir ve Cicioğlu (2020) and Participation motivation to physical activity Scale(PMPAS) developed by Tekkurşun-Demir ve Cicioğlu (2018) are employed as data collection set.

Digital Game Addiction Awareness Scale(DGAAS); Internal awareness(IA) is consist of 1, 2, 3, 4, 5 items, external awareness(EA) is consist of 6, 7, 8, 9, 10, 11, 12, items. IA sub-dimension shows the level of understanding the inner voice of the individual towards digital game addiction and being aware of the emotions caused by digital game addiction. EA sub-dimension is the level of understanding and awareness of how the individual's digital game addiction affects his relations with the social environment such as friends, work, and school. In sum, DGAAS measures an individual's level of knowledge about digital game addiction, as well as the level of understanding and awareness of its internal and external effects.

Participation Motivation To Physical Activity Scale(PMPAS); Individual reasons sub-dimension is consist of 1, 2, 3, 4, 5, 6 items, environmental reasons sub dimension is consist of 7, 8, 9, 10, 11, 12 items, and arbitrariness sub-dimension is consist of 13, 14, 15, 16 items. The total variance of the 16-item measurement tool was 54.69% (Tekkurşun-Demir ve Cicioğlu, 2018). Cutpoints are as follow: 1- 16 very low, 17-32 low, 33-48 medium, 49- 64 high and 65-80 very high.

Data Analysis

All the data collected from the secondary school students were rigorously examined, incorrect and outlier data were removed, consequently, 697 data of students were determined as valuable to analysis. Descriptive statistics on whether the categories of all independent variables are normally distributed in the **DGAAS** and **PMPAS** total scores and sub-dimension scores were examined. Given that the coefficients of kurtosis and skewness, it was determined that all sub-dimensions of all independent variables were normally distributed in the total score of the scale and its sub-dimensions.In the analysis of data; Pearson correlation test, T-Test for Independent Groups (for comparison between groups), one-way analysis of variance (ANOVA), arithmetic mean ($\bar{x}$), standard deviation (sd), percent (%), frequency (n) were harnessed.

RESULTS

The study findings are presented with tables in this section.

What is the digital game addiction awareness of secondary school students?

The digital game addiction awareness of secondary school students is shown in Table2

Table 2. Descriptive Statistics of Secondary School Students' Digital Game Addiction Awareness

	N	Minimum	Maximum	$\overline{X}$	S
Internal Awareness	697	5,00	25,00	16,36	4,51
External Awareness	697	12,00	35,00	25,68	5,09
Total	697	22,00	60,00	42,04	8,66

As shown in the table.2, The highest score secondary school students got from the internal awareness sub-dimension of the DGAAS is 25, and the lowest score is 5. The average score the students got from this sub-dimension was 16.36, and the standard deviation was 4.51. The highest score obtained from the External Awareness dimension of the scale is 35, and the lowest score is 12. The mean score from this sub-dimension is 25.68, and standard deviation is 5.09. The highest score obtained from the scale is 60 and the lowest score is 22. The average score is 42.04, and the standard deviation for the whole scale is 8.66. Given that the average scores and the cut-off points of the scale (Tekkurşun-Demir & Cicioğlu, 2020), it was found that secondary school students' internal awareness of digital game addiction was between 11-16, external awareness was between 17-25, and total awareness score was between 29-44 at medium level.

What is the motivation of secondary school students to participate in physical activity?

The PMPA of secondary school students is shown in Table 3.

Table 3. Descriptive Statistics Results on Secondary School Students' PMPA

	N	Minimum	Maximum	$\overline{X}$	S
Individual Reasons	697	16,00	30,00	24,18	3,40
Environmental Reasons	697	11,00	30,00	20,89	3,87
Arbitrariness	697	10,00	20,00	15,46	2,72
Total	697	41,00	80,00	60,53	7,68

As shown in table 3., The highest score secondary school students got from individual reasons sub-dimension of the PMPAS is 25, the lowest score is 16. The average score students got from this sub-dimension 24,18 and the standart deviation is 3,40’tır. While the highest score secondary school students got from environmental reasons is 30, the lowest score is 11. The average score students got

from this sub-dimension 20,89 and the standart deviation is 3,87. The highest score secondary school students got from arbitrariness sub-dimension of the PMPAS is 20,00, the lowest score is 10,00 . The mean score from this sub-dimension is 15,46, and standard deviation is 2,72. When whole data of PMPAS is examined, the highest score obtained from the scale is 80 and the lowest score is 41. While the mean score is 60.53, the standard deviation is 7.68. Given that the average scores and the cut-off points of the scale (Tekkurşun-Demir & Cicioğlu, 2018), results demonstrate that the secondary school students have high motivation to participate in physical activity with 49-64 points.

Do secondary school students' digital game addiction awareness and participation motivation to physical activity differ according to their gender?

Tablo 4. Gender - Independent Samples T-Test Results

	Gender	N	$\overline{X}$	S	t	sd	p
Internal Awareness	Women	456	17,48	4,02	-9,57	695	,000*
	Men	241	14,24	4,64			
External Awareness	Women	456	26,81	4,50	-8,45	695	,000*
	Men	241	23,55	5,46			
DGAA	Women	456	44,29	7,58	-10,08	695	,000*
	Men	241	37,79	8,99			
Individual Reasons	Women	456	24,23	3,25	-,528	695	,598
	Men	241	24,08	3,66			
Environmental Reasons	Women	456	20,75	3,83	1,227	695	,220
	Men	241	21,13	3,96			
Arbitrariness	Women	456	15,36	2,55	1,386	695	,166
	Men	241	15,66	3,01			
PMPA	Women	456	60,34	7,21	,876	695	,381
	Men	241	60,88	8,50			

*p<,05

As shown in Table 4, It is observed that the IA scores($\overline{X}$ =17,48) of female students are significantly higher than the IA scores ($\overline{X}$ =14,24) of male students ($t_{(695)}$= -9,57, p<0,05). Smilarly, the EA scores ($\overline{X}$ =26,81) of female students are significantly higher than the XA scores ($\overline{X}$ =23,55) of male students ($t_{(695)}$= -8,45, p<0,05). Furthermore, results reveal that the overall score of DGAA ($\overline{X}$ =44,29) of female students are significantly higher than the overal score of DGAA ($\overline{X}$ =37,79) of male students ($t_{(695)}$= -10,08, p<0,05). It is safe to say female students' internal, external, and total awarenesses of digital game addiction are higher compared with male students.

On the other hand, considering the scores obtained from the Motivation Scale for Participation in Physical Activity and its` sub dimensions, Motivation to Participate in Physical Activity among secondary school students does not differ according to gender.

Do secondary school students' awareness of digital game addiction participation motivation to physical activity differ according to age groups?

Table 5. One-Way Anova Results of the Difference Between Digital Game Addiction Awareness and Motivations for Participation in Physical Activity of Secondary School Students by Age Groups

	Age**	N	$\overline{X}$	S	Total Sum of Squares	Mean Rank	F (694/2)	p	Post Hoc (LSD)
Internal Awareness	Adolescence	77	16,99	4,80	50,49	25,243	1,241	,290	--
	Middle Adolescence	593	16,32	4,49	14112,13	20,334			
	Late Adolescence	27	15,52	4,14	14162,61				
External Awareness	Adolescence	77	25,21	5,21	52,40	26,198	1,010	,365	--
	Middle Adolescence	593	25,79	5,10	18004,16	25,943			
	Late Adolescence	27	24,67	4,47	18056,56				
Digital Game Addiction Awareness	Adolescence	77	42,19	8,91	97,59	48,797	,650	,522	--
	Middle Adolescence	593	42,11	8,67	52090,03	75,058			
	Late Adolescence	27	40,19	7,71	52187,62				
Individual Reasons	Adolescence	77	23,79	3,34	113,71	56,86	4,987	,007*	B>C
	Middle Adolescence	593	24,31	3,43	7911,58	11,40			
	Late Adolescence	27	22,33	2,15	8025,29				
Environmental Reasons	Adolescence	77	20,23	3,91	105,32	52,66	3,535	,030*	B>C
	Middle Adolescence	593	21,04	3,88	10337,50	14,90			
	Late Adolescence	27	19,41	3,08	10442,82				
Arbitrariness	Adolescence	77	14,99	2,83	64,70	32,35	4,415	,012*	B>C
	Middle Adolescence	593	15,58	2,71	5084,62	7,33			
	Late Adolescence	27	14,26	2,35	5149,32				
Participation Motivitation to Physical Activity	Adolescence	77	59,01	7,73	824,94	412,47	7,123	,001*	B>A B>C
	Middle Adolescence	593	60,93	7,70	40186,87	57,91			
	Late Adolescence	27	56,00	4,56	41011,81				

*p<,05
** A: Adolescence: 14; B: Middle Adolescence: 15-17 C: Late Adolescence: 18-19

Table 5 shows that there is no significant difference between IA scores of students according to their age groups (f(694/2)=1,241, p=,290>.05) in the Inner Awareness sub-dimension of DGAAS. Smiliarly, there is no significant difference between the external awareness of the students according to age groups ($f_{(694/2)}$=1,010, p=,365>,05) in the External Awareness sub-dimension of DGAAS. Moreover, the total scores of students' awareness of digital game addiction do not differ significantly according to age groups ($f_{(694/2)}$=,650, p=,522>,05). Consequently, secondary school students' awareness of digital game addiction does not differ according to age groups including its` two sub-dimensions (internal and external awareness).

Compared to digital game addiction awareness scores, participation motivation to physical activity scores differ significantly according to age groups. There is a significant difference between the motivation scores of the students according to their age groups in the Individual Reasons sub-dimension of PMPA ($f_{(694/2)}$=4,987, p=,007<,05). According to the result of the detailed analysis (LSD test); it has been determined that individual reasons motivation scores of students who are in middle adolescence ($\overline{X}$ =24,31) were higher than the students who are in late adolescence ($\overline{X}$ =22,33). Similarly, there is a significant difference between the motivation scores of students according to age groups in the Environmental Reasons. Similarly, there is a significant difference between the motivation scores of students according to age groups in the Environmental Reasons. According to the result of the detailed analysis (LSD test); it was found that the motivation scores of middle-adolescent students due to environmental reasons (($\overline{X}$ =21,04) was higher than the students who are in late adolescence ($\overline{X}$ =19,41)

Finally, there is a significant difference between the motivation scores of the students according to the age groups in the Arbitrariness sub-dimension ($f_{(694/2)}$=4,415, p=,012<,05). Detailed analysis (LSD test) results shows that the students in the middle adolescence period have higher motivation scores ($\overline{X}$ =15,58) than the students in the late adolescence period ($\overline{X}$ =14,26). There is a significant difference between the total score of PMPA according to age groups ($f_{(694/2)}$=7,123, p=,001<,05). The result of the detailed analysis (LSD test) shows that the students in middle adolescence have higher PMPA scores ($\overline{X}$ =60.93) than both students in early adolescence ($\overline{X}$ =59,01) and late adolescence($\overline{X}$ =56,00). In sum, it is observed that secondary school students' scores of PMPA differ significantly according to age groups, including all sub-dimensions.

Do secondary school students digital game addiction awareness and participation motivation to physical activity differ according to their mother's educational status?

Table 6. One-Way Anova Results of the Difference Between Digital Game Addiction Awareness and Participation Motivation to Physical Activity of Secondary School Students by Educational Level of Mother

	Mother Educational Status	N	$\overline{X}$	S	Total Sum of Squares	Mean Rank	F (694/2)	p
Internal Awareness	Primary School	306	16,42	4,19	2,99	1,495	,073	,929
	Secondary School	267	16,28	4,76	14159,62	20,403		
	Higher Education	124	16,40	4,76	14162,61			
External Awareness	Primary School	306	25,76	5,04	43,16	21,581	,831	,436
	Secondary School	267	25,40	5,07	18013,40	25,956		
	Higher Education	124	26,09	5,27	18056,56			
DGAA	Primary School	306	42,18	8,39	65,58	32,787	,437	,646
	Secondary School	267	41,68	8,77	52122,05	75,104		
	Higher Education	124	42,49	9,11	52187,62			
Individual Reasons	Primary School	306	24,08	3,40	5,25	2,624	,227	,797
	Secondary School	267	24,25	3,29	8020,05	11,556		
	Higher Education	124	24,26	3,62	8025,29			
Environmental Reasosns	Primary School	306	21,01	3,67	34,30	17,150	1,143	,319
	Secondary School	267	20,96	3,93	10408,52	14,998		
	Higher Education	124	20,41	4,26	10442,82			
Arbitrariness	Primary School	306	15,25	2,61	27,12	13,561	1,837	,160
	Secondary School	267	15,58	2,79	5122,20	7,381		
	Higher Education	124	15,73	2,81	5149,32			
PMPA	Primary School	306	60,34	7,51	31,65	15,824	,268	,765
	Secondary School	267	60,79	7,74	40980,16	59,049		
	Higher Education	124	60,40	7,98	41011,81			

A: Primary School (1-8), B: Secondary School(9-12), C: Higher Education (Bachelor or above)

Table 6 indicate that there is no significant difference between neither the internal awareness (f(694/2)=,073, p=,929>,05) nor external awareness scores (f(694/2)=,831, p=,436>,05) of digital game addiction and the educational level of mothers of students. Moreover, There is no significant difference between educational level of mothers of students and the total awareness scores of game addiction ($f_{(694/2)}$=,437, p=,646>,05). Consequently, it can be claimed that the relationship between the educational level of mothers of students and internal awareness, external awareness and digital game addiction awareness are trivial.

Similarly table 6 demonstrate that there is no significant relationship between neither individual reasons ($f_{(694/2)}$=,227, p=,797>,05) nor environmental reasons ($f_{(694/2)}$=1,143, p=,319>,05)

nor Arbitrariness sub-dimensions of PMPA ($f_{(694/2)}$=1,837, p=,160>,05) and the educational level of mothers of students. According to the findings, there is no significant difference between the educational level of mothers of secondary school students and their participation motivation to physical activity as well as all sub-dimensions.

Do secondary school students digital game addiction awareness and participation motivation to physical activity differ according to their fathers` educational status?

Table 7. One-Way Anova Results of the Difference Between Digital Game Addiction Awareness and Participation Motivation to Physical Activity of Secondary School Students by Educational Level of Fater

	Father Educational Status	N	$\overline{X}$	S	Total Sum of Squares	Mean Rank	F (694/2)	p	Post Hoc (LSD)
Internal Awareness	Primary School	239	16,84	3,93	113,17	56,582	2,795	,062	--
	Secondary School	284	16,31	4,75	14049,45	20,244			
	Higher Education	174	15,78	4,81	14162,61				
External Awareness	Primary School	239	26,16	4,80	158,66	79,329	3,076	,047*	A>C
	Secondary School	284	25,76	5,34	17897,90	25,789			
	Higher Education	174	24,91	5,00	18056,56				
DGAA	Primary School	239	43,00	7,84	533,18	266,589	3,582	,028*	A>C
	Secondary School	284	42,07	9,13	51654,44	74,430			
	Higher Education	174	40,70	8,81	52187,62				
Individual Reasons	Primary School	239	24,32	3,20	8,75	4,374	,379	,685	--
	Secondary School	284	24,06	3,46	8016,55	11,551			
	Higher Education	174	24,16	3,56	8025,59				
Environmental Reasons	Primary School	239	21,07	3,71	24,68	12,341	,822	,440	--
	Secondary School	284	20,92	3,84	10418,14	15,012			
	Higher Education	174	20,58	4,14	10442,82				
Arbitrariness	Primary School	239	15,23	2,56	30,49	15,242	2,067	,127	--
	Secondary School	284	15,47	2,75	5118,83	7,376			
	Higher Education	174	15,78	2,87	5149,32				
PMPA	Primary School	239	60,62	7,33	3,70	1,851	,031	,969	--
	Secondary School	284	60,45	7,90	41008,11	59,089			
	Higher Education	174	60,52	7,81	41011,81				

*p<,05
A: Primary School (1-8), B: Secondary School(9-12), C: Higher Education (Bachelor or above)

Accordingto table 7; although the relationship between the internal awareness of DGAA ($f_{(694/2)}$=2,795, p=,062>,05) and the educational level of fathers of students was non significant, there is significant relationship between the external awareness of DGAA($f_{(694/2)}$=3,076, p=,047<,05) and the educational level of students` fathers. In this context, the detailed analysis revealed (LSD test) that the external awareness scores of the students whose fathers are primary school graduates ($\overline{X}$ =26,16) are higher than whose fathers are higher education($\overline{X}$ =24,91).

There is a significant relationship between the students' total scores of DGAA and educational leves of students` fathers. According to the detailed analysis results (LSD test), DGAA scores of the students whose fathers are primary school graduates ($\overline{X}$ =43,00) are higher than whose fathers are higher education ($\overline{X}$ =40,70). Consequently, it is safe to say that although secondary school students' internal awareness of digital game addiction does not differ according to their father's education level, the relationship between their father's education level and both external awareness and total awareness is significant.

On the other hand, table 7 present that there is no significant relationship between neither individual reasons ($f_{(694/2)}$=,379, p=,685>,05) nor environmental reasons ($f_{(694/2)}$=,822, p=,440>,05) nor Arbitrariness sub-dimensions of PMPA ($f_{(694/2)}$=2,067, p=,127>,05) and the educational level of students` fathers. Moreover, there is no significant relationship between the total score of PMPA and

educational level of students` fathers ($f_{(694/2)}$=,031, p=,969>,05). The findings show that there is no significant relationship between secondary school students' PMPA scores as well as its` sub-dimensions and their father's educational level.

Do secondary school students' digital game addiction awareness and their participation motivation to physical activity differ according to their daily use of technology?

Tablo 8. One-Way Anova Results of the school students' digital game addiction awareness and their participation motivation to physical activity differ according to their daily use of technology?

	Daily Use of Technology	N	$\overline{X}$	S	t	sd	p
Internal Awareness	4 hours and below	246	17,48	4,07	4,938	695	,000*
	Over 4 hours	451	15,75	4,62			
External Awareness	4 hours and below	246	27,23	4,46	6,074	695	,000*
	Over 4 hours	451	24,84	5,22			
DGAA	4 hours and below	246	44,72	7,65	6,173	695	,000*
	Over 4 hours	451	40,59	8,84			
Individual Reasons	4 hours and below	246	24,72	2,96	3,138	695	,002*
	Over 4 hours	451	23,88	3,58			
Environmental Reasons	4 hours and below	246	20,92	3,90	,189	695	,850
	Over 4 hours	451	20,86	3,86			
Arbitrariness	4 hours and below	246	15,57	2,38	,787	695	,432
	Over 4 hours	451	15,40	2,89			
PMPA	4 hours and below	246	61,22	6,84	1,756	695	,080
	Over 4 hours	451	60,15	8,08			

*p<,05

Table 8 shows that there is a significant difference between internal awareness scores of students who use technology for 4 hours or below ($\overline{X}$ =17,48) and students who use technology more than 4 hours ($\overline{X}$ =15,75) in favor of students who use technology for 4 hours or below ($t_{(695)}$= 4,938, p=,00<,05). Similarly, it is found that external awareness scores of students who use technology for 4 hours or below ($\overline{X}$ =27,23) are significantly more than students who use technology 4 hours over ($\overline{X}$ =24,84) ($t_{(695)}$= 6,074, p=,00<,05). Lastly, there is a significant difference between the total score of DGAA of students` technology use 4 hours or below ($\overline{X}$ =44,72) and students who use technology more than 4 hours ($\overline{X}$ =40,59) in favor of students who use technology for 4 hours or below ($t_{(695)}$= 6,173, p=,00<,05). In sum, students whose daily technology use is 4 hours or less have higher internal awareness, external awareness and total awareness of digital game addiction compared to whose use technology more than 4 hours in a day.

When the results obtained from the Scale of Participation Motivations to Physical Activity(PMPA) are examined, PMPA differed significantly in favor of students who use technology for 4 hours or below ($\overline{X}$ =24,72, $\overline{X}$ =23,88) in a day in the Individual Reasons sub-dimension ($t_{(695)}$= 3,138, p=,002<,05) , however, there was no significant difference between students who use technology for 4 hours or below ($\overline{X}$ =20,92) and those whose daily technology use is more than 4 hours ($\overline{X}$ =20,86) in the Environmental Reasons sub-dimension ($t_{(695)}$=,189, p=,850>,05), in Arbitrariness sub-dimension ($t_{(695)}$=,787, p=,432>,05) as well as in total score of PMPA ($t_{(695)}$=1,756, p=,080>,05). These results demonstrate that students' PMPA did not differ according to their daily technology use, except Individual Reasons.

Do secondary school students' digital game addiction awareness and their participation motivation to physical activity differ according to regular physical activity status?

Tablo 9. One-Way Anova Results of the secondary school students' digital game addiction awareness and their participation motivation to physical activity differ according to regular physical activity status?

	Regular Phyiscal Activity Status	N	$\overline{X}$	S	t	sd	p
Internal Awareness	Yes	361	16,58	4,46	1,328	695	,185
	No	336	16,13	4,56			
External Awareness	Yes	361	25,92	4,85	1,265	695	,206
	No	336	25,43	5,34			
DGAA	Yes	361	42,50	8,36	1,436	695	,151
	No	336	41,56	8,95			
Individual Reasons	Yes	361	24,80	3,25	5,073	695	,000*
	No	336	23,51	3,42			
Environmental Reasons	Yes	361	21,12	3,87	1,635	695	,103
	No	336	20,64	3,87			
Arbitrariness	Yes	361	15,91	2,67	4,512	695	,000*
	No	336	14,99	2,69			
PMPA	Yes	361	61,82	7,46	4,675	695	,000*
	No	336	59,14	7,67			

*p<,05

Table 9 shows that there is no significant relationship between Regular Physical Activity Status and neither internal awareness ($t_{(695)}$=1,328, p=,185>,05) nor external awareness ($t_{(695)}$=1,265, p=,206>,05) of secondary school students. In total, it is not found any relationship between Regular Physical Activity Status and Digital Game Addiction Awareness(DGAA) scores ($t_{(695)}$=1,436, p=,151>,05). Briefly, these results demonstrate that secondary school students' DGAA scores as well as its` sub-dimensions did not differ according to their Regular Physical Activity Status.

On the other hand, as expected, Table 9 reveal that there is a significant difference between individual scores of students who do regular physical activity ($\overline{X}$ =24,80) and students who do not ($\overline{X}$ =23,51) in favor of students who do regular physical activity (t(695)= 5,073, p=,000<,05) according to individual reasons. Similarly, according to Arbitrariness sud-dimension, there is a significant difference between individual scores of students who do regular physical activity ($\overline{X}$ =15,91) and students who do not ($\overline{X}$ =14,99) in favor of students who do regular physical activity ($t_{(695)}$= 4,512, p=,000<,05). However, interestingly, the relationship between environmental reasons and Regular Physical Activity Status was insignificant ($t_{(695)}$=1,635, p=,103>,05). Finally, when the total scores obtained from the Participation Motivation to Physical Activity were examined, there is a significant difference between individual scores of students who do regular physical activity ($\overline{X}$ =61,82) and students who do not ($\overline{X}$ =59,14) in favor of students who do regular physical activity ($t_{(695)}$= 4,675, p=,000<,05). Consequently, Participation Motivation to Physical Activity of secondary school students differs significantly according to their Regular Phyiscal Activity Status except in Environmental Reasons.

Is there a relationship between secondary school students' Dgital Game Addiction Awareness(DGAA) and Participation Motivation to Physical Activity(PMPA)?

Tablo 10. Pearson Correlation Analysis Results on the Relationship between secondary school students' Dgital Game Addiction Awareness(DGAA) and Participation Motivation to Physical Activity(PMPA)

	Participation Motivation to Physical Activity	
	r	p
Digital Game Addiction Awareness	,295	,000*

*p<,05

Pearson Correlation Analysis is employed to observe whether there is a significant relationship between secondary school students' Digital Game Addiction Awareness(DGAA) and Participation Motivation to Physical Activity(PMPA). As seen in table 10, there is a significant positive relationship between to two scale scores (r=,295; p=,000<,05). Notwithstanding, the correlation coefficient results show that this relationship is weak since the coefficient is between 0.20 and 0.39 (Taşpınar, 2017, s. 194).

DISCUSSION AND CONCLUSION

Accumulated research point out the development of a behavioral addiction due to excessive internet use (Kuss and Griffiths, 2012). Literature also clearly demonstrate that digital game addiction lead to adverse mental health problems in adolescents (Purwaningsih and Nurmala, 2021). However, most studies that seek to ascertain digital game addiction focus on male samples (Männikkö et al., 2020). This is why it is assumed that male students are more under the game addiction risk because they spend more of their free time on digital games such as e-sports. Therefore, both female and male students are included in this study in order to observe whether game addictions is gendered because Do and Hong claim that gender is the one of the variables affecting addiction (2020)

Gürel (2021) found that secondary School students' motivation to play digital games and their motivation to participate in physical activity were higher among male students compared to female. Sımilarly, Godinho et al. (2014) and Can ve Tekkurşun-Demir (2020) found that the digital game addiction scores of male were higher than female e-sports players. This study results shows that digital games addiction awareness among male students was higher compared with female students. Notwithstanding, given the number of females who play digital games is regularly increasing, that is 45% of US in 2018, up from 38% in 206 (Statisctica, 2017) as females engage in digital games more, it can be advocated that digital game addiction awareness among females will proliferate.

There is a scarcity on studies that address the impact of digital addiction on physical activity (Aziz et al., 2021). It is basically hypothesized that the more play electronic games the more physical inactivity (e.g. Alshehri and Mohamed, 2019). On the other hand, there is consensus on females are consistently less active compared to males at all ages. Consequently, it can be claimed that participation motivation to physical activity(PMPA) among females should be less than males. According to Egli et al.(2011), while internal factors (individual reasons) have more impact on male students, external factors(environmental reasons) play more role on female students. However, this study results show that there was no statistically significant difference between male and females secondary school students in terms of PMPA as well as its` sub-dimensions.

When the secondary school students` digital game addiction awareness is examined according to the age group variable, it was found that there was no statistically significant difference in terms of the scores they got from all scales and each sub-dimensions. However, the relationship between age and all sub-dimensions of participation motivation to physical activity differentiated in favour of middle adolescence compared with late adolescence. In addition, the it is observed that the participation motivation of middle adolescence students is higher than early and late adolescence students according to all PMPA scale total score. These results can be speculated due to the fact that middle adolescence students may be willing to participate in more physical activities during the transition period, they enjoy participating in activities with their friends and have a high motivation to have a good time. Moreover, As students approach the end of adolescence, it may become more

common for students to withdraw into their own inner worlds due to the predominance of egocentrism. Can and Tekkurşun Demir (2020) found a positive moderate relationship between the age of the athletes and their digital game addiction scores, and a moderately significant negative relationship between digital game awareness and age. On the contrary, It has been determined by Gurel(2021) that has no relationship between age and students' motivation to play digital games and motivation to participate in physical activity. According to relevant literature, our study shows parallelism with other studies, however, different results can be due to the fact that they were applied to different sample groups.

It is seen that there is no statistically significant difference between to the mother's education level variable and neither digital game addiction awareness nor participation motivation to physical activity terms of the scores they get from the scale and its sub-dimensions. Gurel(2021) found that students whose mothers hold a bachelor's degree had higher scores than students whose mothers were primary school graduates in the success and revival sub-factor of the digital game motivation scale. It was found that the students whose mothers hold a bachelor's degree were scored higher than those whose mothers were primary and secondary school graduates in terms of participation motivation to physical activity (ibid). It was found that the students whose mothers hold a bachelor's degree were scored higher than those whose mothers were primary school graduates in terms of individual reasons sub-dimension (Gurel, 2021). The study of Çakıcı (2018) on the relationship between digital game addiction and anger expression styles in adolescents found that the students whose mothers were primary school graduates and hold a bachelor degree were scored higher than those whose mothers graduated from secondary school in terms of digital game addiction. Given that literature has a contradictory results, the reason for this can be explained by the fact that it was applied in different sample groups, different geopolitical environments and different times.

Armour and Jones (1998) found that the more individuals are influenced by the family for sport and/or physical activity the individual is more enthusiastic to participate. It can be claimed that as the education level of parents is enhanced, parents should be more supportive in order to encourage their children to participate in physical activity because its` utilities which is widely known such as health, socialization. However, this study results show that there was no statistically relationship between fathers` education status and participation motivation to physical activity. Gürel (2021) found that students whose fathers hold a bachelor degree were scored higher than students whose fathers are primary school graduates in terms of individual reasons sub-dimensions

Gurel`s (2021) study also show that although there is no difference between students in the internal awareness sub-dimension of the digital game addiction scale in terms of fathers` education status, it has been observed that he students whose fathers are Primary School graduates, and those whose fathers hold a bachelor degree were scored higher than students whose fathers graduated from secondary schools in terms of external awareness and total score of all scale. On the other hand, Çakıcı (2018) found that there was no significant difference in the relationship between digital game addiction and anger expression patterns in adolescents in terms of father education level variable. According to relevant literature, our study shows parallelism with other studies. In this context, it is safe to claim that our study support other studies conducted in this field.

According to Digital2020: Turkey report (DataReportal – Global Digital Insights", 2021); while total population increased only %1.2(almost 1 million) in between January 2019 and January 2020internet use increased %4 (2.4 million), mobile phone connection increase %3.4 (2.6 million), active social media users increased %4.2(2.2 million). Predictably, this is a consequence of increase in the volume of people who reaching puberty and gaining independence to use technology. It can inherently be expected that the increase in daily use of technology may lead to go up digital game addiction and a decline in physical activity. When the awareness of secondary school students about digital game addiction is examined according to the daily technology use variable, it is seen that the students who use technology for 4 hours or less have higher scores on internal awareness, external awareness, and the total score of the scale than students who use technology for more than 4 hours. Similarly, when the participation motivation to physical activity of secondary school students to

participate in physical activity is examined according to the daily technology use variable, it is seen that the students who use technology for 4 hours or less in the individual reasons sub-factor of the PMPA scale were scored than students who use technology for more than 4 hours. However, it was observed that there was no statistically significant difference in the scores obtained from the environmental reasons and arbitrariness sub-dimensions as well as the whole scale. This might be derived from that students' exposure to more technology has a negative effect on their digital awareness and participation motivation to physical activity due to reasons such as seeking self-fulfillment in digital games and seeking to do activities that they cannot perform in real life.

Gürel (2021) found that students who play digital games for 1 hour a day have higher participation motivation to physical activity than students who play digital games for 1-2 hours and more than 2 hours in a day. In the study of digital game addiction and awareness of athletes and e-esports players, Can and Tekkurşun Demir (2020) determined that there is a statistically significant difference in the playing time of the athletes who play daily digital games (as their digital game time increases, their addiction increases but awareness decreases). In the study of the relationship between internet addiction and healthy lifestyle behaviors of secondary school students, Altun Kürek and Özçoban (2020), found that there is a statistically significant difference between students' average daily internet use and goals when they are not studying.

When the awareness of secondary school students about digital game addiction was examined according to the variable of regular physical activity, it was seen that there was no statistically significant difference in terms of the scores they got from the scale and its sub-dimensions. When secondary school students to participation motivation to physical activity are examined according to the variable of doing regular physical activity, it is seen that the physical activity participation motivation scores of the students who do regular physical activity are higher than students who do not do regular physical activity in the individual reasons sub-dimension. However, the relationship between environmental reasons and participation motivation to physical activity was trivial. On the other hand, it was seen that the students who do not do regular physical activity have higher scores participation motivation to physical activity than the students who do regular physical activity in the arbitrariness sub-dimensions and the whole scale.

Although psychological variables vary according to causal factors for physical activity participation, what exactly determines participation motivation to physical activity is rarely known (Roychowdhury, 2018). Gurel found that the students who participate in physical activity for a maximum of 60 minutes a day have higher scores than the students who participate in physical activity for 1-2 hours and more than 2 hours in the sub-dimension of the motivation to play digital game scale. Erbaş and Gümüş (2020) determined that there is a statistically significant positive correlation between students' social media addiction and individual reasons in participation motivation to physical activity. Marufoğlu (2020) found no statistical difference in the effect of digital game addiction on physical activity and sleep habits in secondary school students. In our study, it was determined that there is a positive and significant relationship between the digital game addiction awareness of secondary school students and their participation motivation to physical activity. This can be interpreted as that the more students' awareness of digital game addiction increases, the more their participation motivation in physical activity also increases. It should be noted that this study was conducted in a short time period and by collecting data once. Therefore, it is further needed to conduct longitudinal and/or long-term studies that can reveal the effects of the independent variables in the research on the awareness of digital game addiction and participation motivation to physical activity, and correlation between two variables.

RECOMMENDATIONS

1. In this study, a research was conducted for secondary school students, the study can also be done with students studying at university, master's and doctorate.

2. Quantitative research model was used in this study, the same study can be done by using qualitative research model, so that the study can be investigated more comprehensively.

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International Journal of Progressive Education, Volume 18 Number 4, 2022

Curriculum Literacy Levels of English Teachers: A Mixed Method Research*

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Abstract

The aim of this study was to investigate the English teachers' curriculum literacy levels and their views on the English curriculum. The convergent parallel approach, which is one of the mixed research method, was used in the study. The population of the study consisted of English teachers working in secondary schools and high schools a city in the east of Turkey during 2020-2021 academic year. The sample of the study consisted of 198 English teachers in the quantitative part and 70 in the qualitative part, selected by convenience sampling method. Both quantitative and qualitative data were collected simultaneously and analyzed separately. Then, it was tried to present a generalizable and in-depth perspective for the purpose of the study. The "Curriculum Literacy Scale" was used to collect quantitative data. The scale consisted of 18 items and three sub-scales: *knowing the program*, *planning* and *implementation*. The Cronbach's alpha value of the curriculum literacy scale was .774. An interview form developed by the researcher was used to collect qualitative data. The results revealed that the participants had high levels of curriculum literacy. A significant difference was not found between participants' curriculum literacy levels and gender, school type and work experience. The participants stated that the curriculum was sufficient for teaching reading skills, however it was insufficient for teaching speaking skills, that they used games to make the program interesting, and that intensive curriculum was a problem while implementing the program. It was concluded as a result of the study that the participants' high level of curriculum literacy levels may increase their curriculum awareness and may contribute to conduct their teaching in a more conscious way.

Keywords: Curriculum Literacy; English Teachers; Mixed Method

DOI: 10.29329/ijpe.2022.459.14

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* This study was produced from the master thesis of the second author under the supervision of the first author.

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INTRODUCTION

The curriculum enables the education to progress more systematically and organized in schools (Albayrak, 2020). An effective curriculum bases on a well-studied and well-documented action plan. Successful curriculums are plans written to show the steps and resources to be used in practice, and to help practitioners measure whether the goals are achieved (Kawata, 2020). Curriculum development is not limited to addition or removal of new topics to the prepared program. On the contrary, it is a process based on practice. It is the continuous development of the educational process and all educational materials (Gültekin, 2017). Remaining the program unchanged may not meet the needs of individuals in the context of rapidly changing social structure, economy and living standards. For this reason, in curriculum development, contemporary methods should be included, and the interests, needs and experiences of the student should be taken into consideration and associated with real life (Fer, 2019; Kahramanoğlu, 2019). The most important part of education is the teacher who is regarded as the center of instruction in the classroom (Özer & Gelen, 2008). Success or failure in the teaching process is related to teachers' way of using the classroom, approaching the student, teaching the lesson, providing feedback to the student, motivating the student and implementing the curriculum (Sünbül, 1996). Therefore, teachers play a key role in curriculum implementation (Wang & Cheng, 2009). In addition, teachers are responsible to implement these programs. In order for teachers to fulfill their responsibilities adequately, they need to improve their content knowledge, be aware of the general outline of the curriculum. Therefore, teachers who will implement the program should have information about the program, understand the program, make plans and implement it. In order to interpret the general outline of the curriculum and put them into practice, the teachers need to have curriculum literacy because success is achieved only when the curriculum is implemented efficiently (Aslan, 2018; Kızılaslan Tunçer, 2019).

Curriculum literacy, which is one of the 21st century literacy skills, refers to mastering the curriculum, knowing how to implement the curriculum, having all the skills on how to measure it (Akyıldız, 2020), analyzing the elements of the curriculum, evaluating it on the basis of the society we live in, deciding the appropriate method, technique and evaluation and designing a lesson plan appropriate for the grade level (Kahramanoğlu, 2019). Curriculum literacy is defined as having information about the elements of the curriculum (Bolat, 2017), interpreting this information to examine the curriculum with a critical perspective (Keskin & Korkmaz, 2017) and making an appropriate and adaptable planning by interpreting the existing situation instead of applying monotonous plans (Nsibande & Modiba, 2012).

Similar to all teachers who are interpreters and implementers of the curriculum, English teachers also make modifications to increase productivity of the existing curriculum by using their knowledge, experience and experience in order to meet their students' needs. English teachers experience several problems while teaching the lessons, applying the prepared curriculum and trying to increase productivity in this language. In this context, the literacy levels of English teachers and their views on the English curriculum was addressed in this study.

As in all branches, it is thought that English language teachers' higher levels of curriculum literacy will increase success in language teaching. If teachers, who can interpret the goal and content of the curriculum, shapes and transfers the curriculum by tailoring it to students' level, success will be achieved in language teaching. Teachers emphasized that some ideal situations such as time, exposure to language, awareness of learning purpose, and different types of input (Adrian, 2010) may be effective in language teaching. This situation may vary depending on the teacher, student level, external factors, school climate, social environment, people's needs and many other factors. With the increasing importance of English, it is observed that a lot of studies has been carried out to identify these reasons and offer suggestions. A brief literature review shows that there are many studies on curriculum-related problems in English learning and teaching in Turkey (Günday, 2007; Can & Can, 2014; Ateş & Günbayı, 2017; Yaman, 2018; Şahin et al., 2018; Merter et al., 2012). Of them, the issue of curriculum literacy has received a considerable attention recently. However, the studies on English curriculum (Seçkin, 2011; Demirtaş & Erdem, 2015; Öztürk, 2019) and curriculum literacy (Erdem &

Eğmir, 2018; Aslan, 2018; Kahramanoğlu, 2019; Çelebi & Narinalp, 2020; Keskin, 2020; Sarıca, 2021, Ünal, 2021) are limited. Therefore, this study is important as it will raise awareness on English teachers regarding curriculum literacy as well as being a source of information for curriculum developers. Furthermore, the study is also significant in that it provides information about the views of elementary and high school English teachers on teaching English.

This study aimed to determine the curriculum literacy levels of English teachers working in elementary schools and high schools and their opinions on the English curriculum. Therefore, answers to the following questions were sought in the study:

1. What are the opinions of English teachers on curriculum literacy levels in terms of knowing, planning and implementing the curriculum?

2. Do English teachers' opinions on curriculum literacy differ significantly with regard to gender, school level, and work experience?

3. What are the features of the English curriculum that English teachers consider useful and adequate for teaching the four basic skills: reading, writing, listening and speaking?

4. What are the features of the English curriculum that English teachers consider lacking in teaching the four basic skills: reading, writing, listening and speaking?

5. What are the methods that English teachers use to revise the content of the curriculum in order to make it interesting and suitable for their students?

6. What are the problems experienced by English teachers regarding the curriculum while teaching the lesson?

METHOD

Research Model

The convergent parallel approach, which is one of the mixed research method, was used in this study the aim of which was to determine the curriculum literacy levels of English teachers and their opinions on the English curriculum. Mixed method is a type of research in which quantitative and qualitative methods are used simultaneously (Christensen et al., 2015). According to Creswell (2009: 108), the convergent parallel approach is a mixed method design in which quantitative and qualitative data are used together, data collection tools are distributed and collected, and the results are analyzed and combined simultaneously in order to make a comprehensive analysis.

Research Procedure

The aim of this study was to determine English teachers' views on curriculum literacy levels and curriculum**.** Both quantitative and qualitative data were collected at the same time and analyzed separately in the study. Then, evaluating these data sets together, a generalizable and in-depth perspective was presented. The figure showing the procedure followed in the research is as follows:

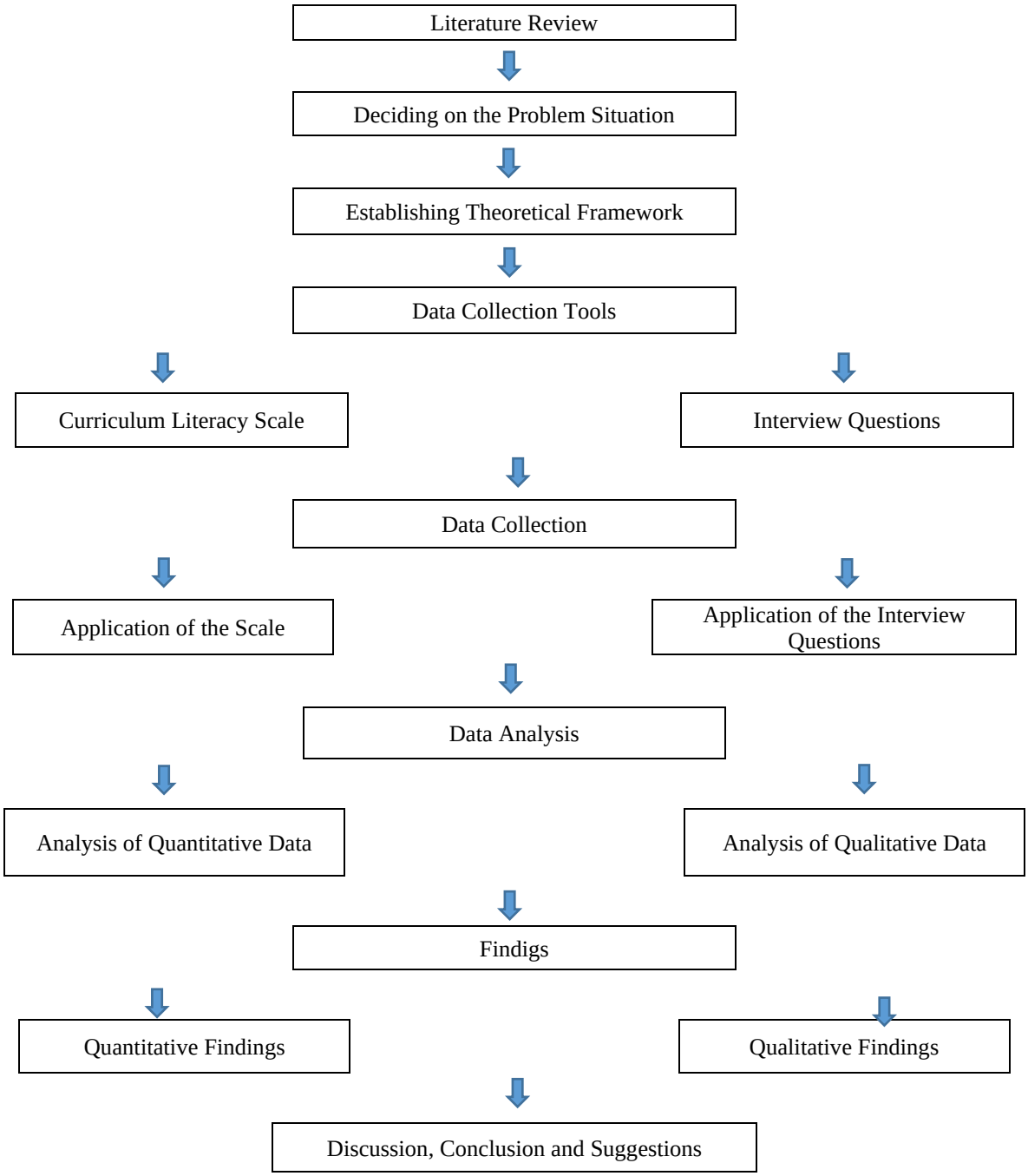

Figure 1. Procedure Table

Population and Sample of the Study

The population of the research consisted of 379 English teachers working in public elementary schools and high schools a city in the east of Turkey in the 2020-2021 academic year. Of them, 198 participated in the quantitative part and 70 participated in the qualitative part of the study. The participation was on a voluntary basis and convenience sampling method was used to select samples. The main purpose of convenience sampling method is to reach the participants without spending excessive time, money and effort (Baltacı, 2018). Therefore, Individuals who are easy to contact or to reach are included in the study (Christensen, et al., 2015; Büyüköztürk, et al., 2015). Table 1 shows the demographic information of the participants taking part in the quantitative part of the study.

Table 1. Demographic Information of Teachers in the Quantitative Part of the Study

		Number (N)	*Percentage (%)*
Gender	Male	48	24,2
	Female	150	75,8
School Level	Elementary School	123	62,1
	High School	75	37,9
Work Experience	1-5 years	67	33,8
	6-10 years	74	37,4
	11-15 years	27	13,6
	16 years and above	30	15,2

48 (24.2%) of the 198 teachers participating in the quantitative part of the study were male and 150 (75.8%) were female. The school level of the participants showed that 123 (62.1%) worked in elementary schools and 75 (37.9%) in high schools. In addition, 67 (33.8%) of the participants had 1-5 years, 74 (37.4%) 6-10 years, 27 (13.6%) 11-15 years and 30 (15.2%) had 16 years or more work experience.

Table 2. Demographic Information of Teachers in the Qualitative Part of the Study

		Number (N)	*Percentage (%)*
Gender	Male	10	14,3
	Female	60	85,7
School Level	Elementary School	45	64,3
	High School	25	35,7
Work Experience	1-5 years	24	34,3
	6-10 years	20	28,6
	11-15 years	16	22,9
	16 years and above	10	14,3

Of the 70 teachers who took part in the qualitative part of the study, 10 (14.3%) were male and 60 (85.7%) were female. 45 (64.3%) worked in elementary schools and 25 (35.7%) worked in high schools. Considering the professional seniority of the teachers, 24 (34.3%) had 1-5 years, 20 (28.6%) 6-10 years, 16 (22.9%) 11-15 years, 10 (%14,3) had 16 years or more work experience.

Data Collection Tools

Curriculum Literacy Scale

The Curriculum Literacy Scale was developed by Aslan (2018) to investigate elementary school teachers' opinions on curriculum literacy levels. The scale consists of three sub-scales: knowing the program (Items 1,2,3,4,5,6 items) planning (Items 7,8,9,10,11,12,13) and implementation (Items 14,15,16,17,18). The stratified Alpha was used to calculate the reliability of the scale which was found to be .774. In this study, the Kaiser–Meyer–Olkin value of the scale was found as .712 and the Bartlett's test as 326.866 p=.000.

Qualitative Data Collection Tool

The qualitative data collection tool used in the study is the interview form prepared by the researcher. A comprehensive literature review was carried out and the interview questions were prepared in line with these studies. In order to obtain expert opinion, the interview questions were revised by three faculty members and four English teachers working in public schools. Finally, a semi-structured interview form was developed on the basis of feedback received from the experts. The aim of the interview form was to qualitatively determine the opinions of English teachers working in

public elementary schools and high schools a city in the east of Turkey on the English curriculum. The participation was on a voluntary basis.

Data Analysis

Analysis of Quantitative Data

SPSS 22.0 package program was used in data analysis. The standard deviation, percentage, frequency and arithmetic mean was calculated and the significance levels were determined with regard to the independent variables (gender, school type, and work experience). In case the variables had normal distribution, independent samples t-test and ANOVA (analysis of variance) tests were used to investigate the significance and relationships.

Analysis of Qualitative Data

The interview form aimed to examine the opinions of English teachers on the English program. Descriptive analysis method was used in data analysis. The aim of descriptive analysis approach is to present the data after organizing and interpreting the data. Themes are created and the data is grouped and interpreted on the basis of the themes. When required, comparisons between cases are also included (Yıldırım & Şimşek, 2008: 224). According to Günbayı (2019), the data obtained in the interview are divided into the themes without any changes and then are associated and described within the themes. In this study, the themes were determined and the findings were grouped in line with the themes. The answers of the participants were presented in relation to the themes, without making any changes as expected in the descriptive analysis. The answers of some participants were excerpted in the study. These direct quotations are expressed as S1, S2, S3 and so on.

FINDINGS AND INTERPRETATIONS

Findings of Quantitative Data

In this section, the findings regarding the opinions of English teachers on curriculum literacy are presented.

Table 3. Opinions of English Teachers on the Sub-scales of the Curriculum Literacy Scale

Sub-scales	n	$\overline{X}$	Ss	Score Level
Knowing the Curriculum	198	4,26	,60	High
Planning	198	4,60	,46	High
Implementing	198	4,72	,32	High
Curriculum Literacy	198	4,53	,31	High

Table 3 shows that the participants had higher levels of curriculum literacy ($\overline{X}$= 4.53). It was found that, among the sub-scales of Curriculum Literacy Scale, the participants had the highest score in "implementing" ($\overline{X}$= 4.72) and the lowest score in "knowing the program" ($\overline{X}$= 4.26).

Table 4. Comparison of participants' curriculum literacy levels with regard to gender

Sub-scale	Gender	n	$\overline{X}$	ss	t	p
Knowing the curriculum	Male	48	4,25	,62	-,165	,869
	Female	150	4,27	,59		
Planning	Male	48	4,56	,50	-,734	,464
	Female	150	4,61	,45		
Implementation	Male	48	4,65	,36	-1,828	,069
	Female	150	4,74	,31		
Total	Male	48	4,48	,40	-,941	,348

Independent samples t-test in Table 4 demonstrated that *knowing the curriculum* [t(196)= -,165; p>.05], *planning* [t(196)= -,734; p>.05], and *implementation* [t(196)= -1,828; p>.05] sub-scales of Curriculum Literacy Scale did not significantly differ in terms of gender. Similarly, English teachers' Curriculum Literacy Scale results [t(196)= ,910; p>.05] did not significantly differ in terms of gender. It was found that female ($\bar{X}$= 4.54) and male ($\bar{X}$= 4.48) participants strongly agreed with the statements in the Curriculum Literacy Scale.

Table 5. Comparison of participants' curriculum literacy levels with regard to School Level

Sub-scale	School Level	N	$\bar{X}$	sd	t	P
Knowing the curriculum	Elementary	123	4,27	,56	,311	,756
	High School	75	4,24	,66		
Planning	Elementary	123	4,63	,45	1,120	,264
	High School	75	4,55	,47		
Implementation	Elementary	123	4,73	,31	,864	,389
	High School	75	4,69	,33		
Total	Elementary	123	4,55	,34	,901	,369
	High School	75	4,50	,40		

Independent samples t-test in Table 5 revealed that *knowing the curriculum* [t(196)= ,311; p>.05], *planning* [t(196)= 1.120; p>.05], and *implementation* [t(196)= ,864; p>.05] sub-scales of the Curriculum Literacy Scale did not significantly differ with regard to school level. Similarly, English teachers' Curriculum Literacy Scale results [t(196)= ,901; p>.05] did not significantly differ with regard to school level. It was found that participants working in both elementary school ($\bar{X}$= 4.55) and high school ($\bar{X}$= 4.50) strongly agreed with the statements in the Curriculum Literacy Scale.

Table 6. Comparison of participants' curriculum literacy levels with regard to Work Experience

	Work Experience	N	$\bar{X}$	S	F	p	Difference
A. Knowing the Curriculum	a. 1-5 years	67	4,35	,57	1,605	,190	
	b. 6-10 years	74	4,17	,63			
	c. 11-15 years	27	4,18	,58			
	d. 16 years and above	30	4,38	,58			
B. Planning	a. 1-5 years	67	4,63	,44	1,387	,248	
	b. 6-10 years	74	4,63	,47			
	c. 11-15 years	27	4,43	,52			
	d. 16 years and above	30	4,60	,41			
C. Implementation	a. 1-5 years	67	4,75	,44	6,756	,000*	a>c, b>c
	b. 6-10 years	74	4,80	,47			
	c. 11-15 years	27	4,49	,52			
	d. 16 years and above	30	4,67	,41			
D. Total	a. 1-5 years	67	4,58	,32	2,270	,082	
	b. 6-10 years	74	4,53	,36			
	c. 11-15 years	27	4,36	,38			
	d. 16 years and above	30	4,55	,34			

The findings in Table 6 showed that there was no significant difference between the work experience and the Curriculum Literacy Scale [F(3-197)=2.270; p>.05] and its sub-scales *knowing the curriculum* [F(3-197)=1.605; p>.05], *planning* [F(3-197)=1.387; p>.05]. However, it was found that the sub-scale *implementation* [F(3-197)=6,756; p<.05] was significantly differed by work experience. LSD test revealed that there was a significant difference between participants having 1-5 years of work experience and those having 11-15 years of work experience in favor of the former, and between participants having6-10 years of work experience and those having 11-15 years in favor of the former.

Findings of Qualitative Data

Table 7. Teachers' Views on the Useful and Adequate Aspects of the Curriculum for Teaching Four Skills

Theme	Code	f
Useful and Adequate Aspects of the Curriculum for Teaching Four Skills	Sufficient reading skills	18
	Sufficient listening skills	12
	Sufficient coursebooks	12
	Sufficient listening skills	10
	Insufficient supplementary materials and curriculum	10
	Targeting four skills	10
	Relevance to real life	3
	Opportunities to expressing themselves	2
	Appropriate to the students' level	2
	Addressing Multiple Intelligences	1

It is seen in Table 8 that the participants provided a number of answers regarding the usefulness and appropriateness of curriculum for teaching four skills. They mostly stated that the curriculum had sufficient activities for reading and listening skills. However, they stated that the English curriculum failed to provide the opportunity for students to express themselves, be relevant to students' level, and to address multiple intelligences.

Some excerpts regarding this theme are as follows:

P42: "The aspects of the curriculum that I find beneficial include individual assessments at the end of each unit, choosing the topics in accordance with the student's interest and level, and sufficient activities to meet the achievements."

P44: "It includes activities suitable for student level. Another factor that I find useful is that listening and speaking skills are focused more in the 2nd and 3rd grades whereas reading and writing skills are addressed in upper grades. The contents and accordingly the tasks offered in the units are also in line with the interest of the age groups of the students."

Table 8. The Missing Aspects of Curriculum for Teaching Four Skills

Theme	Code	f
The Missing Aspects of Curriculum for Teaching Four Skills	Insufficient speaking activities	22
	Insufficient listening activities	19
	Time constraints	13
	Insufficient supplementary materials	9
	Insufficient writing activities	7
	Complex and out-of-context texts	7
	Boring content	6
	Incomplete assessment methods	5
	Opportunity to talk with foreigners	5
	Activities inappropriate to students' levels	4
	Extensive curriculum content	3
	Test-based exam system	2
	Listening texts without video	2
	Lack of practice	2
	Dialogues inappropriate to students' levels	2
	Insufficient teachers	2
	Lack of need for English	1
	Inappropriate ordering of the units	1

Table 8 shows that the participants mostly stated that the English curriculum included insufficient speaking and listening activities regarding the missing aspects of curriculum for teaching four skills. On the other hand, the least mentioned issues in this theme was lack of need for English and the Inappropriate ordering of the units.

Some excerpts regarding this theme are as follows:

P6: "No matter how hard we try to teach the four basic skills, the fact that the exam system is based on tests decreases students' interest. They are more interested in grammar and testing. For example, if there were an interview-style English assessment instead of a test in the transition of a higher level, communication skills would be much better."

P 48: "Interactive activities aiming to improve speaking skills are not included in the curriculum. Speaking classes should involve online conversations with native speakers of English, at least once a week, so that they can have proper conversations over the internet."

Table 9. Participants' Opinions on the Activities to Adjust the Content of the Curriculum to Interest and Level of the Students

Theme	Code	f
Adjusting the Content to Interest and Level of the Students	Teaching with games	28
	Using videos	13
	Using songs	13
	Using visual materials	12
	Using Web 2.0 tools	9
	Using technology	8
	Drama	8
	Word games	8
	Connecting with daily life	7
	Using different sources	6
	Using dialogues	3
	Addressing different senses	2

Table 9 shows the activities participants used to adjust the content of the curriculum to interest and level of students. It was found that the participants mostly used activities such as *teaching with games*, *using videos*, and *using songs* to tailor the content of the curriculum. On the other hand, the least mentioned them was *addressing different senses*.

Some excerpts regarding this theme are as follows:

P31: "I adjust it using appropriate supplementary materials related to the topic. For example, if a unit does not attract their attention, especially word games, suitable for the levels the students, make the lesson to competitive and fun."

P53: "The methods and techniques I use differ according to the age of the students. For example, I try to use games and songs to make the lesson fun for 5th graders, whereas I use drama activities to improve their speaking skills and gain self-confidence for 8th graders."

Table 10. Participants' Opinions on Problems Experienced while Implementing the Curriculum

Theme	Code	f
Problems Experienced while Implementing the Curriculum	Intensive Curriculum	19
	Time	15
	Insufficient Coursebooks	11
	Insufficient class hours	10
	Class sizes	8
	Grammar-based curriculum	8
	Intensive Vocabulary	6
	Being not suitable for the level	5
	Insufficient listening activities	5
	Lack of supplementary materials	3
	Lack of real environment in which language is used	2
	Lack of technological tools	2
	Insufficient curriculum content	1

Table 10 shows the problems the participants experience while implementing the curriculum. It was found that the most frequent problems they experienced were *intensity of the curriculum*, *time*, and *insufficient books*. On the other hand, the least frequent problems were found to be *lack of real environment in which language is used*, *lack of technological tools*, *insufficient curriculum content*.

Some excerpts regarding this theme are as follows:

P15: "The biggest problem is that the curriculum is intense and class hours are limited."

P23: "There is no time left for the activity because there is an excessive grammatical load in some units."

DISCUSSION AND CONCLUSION

Teachers need to be curriculum literate for a proper functioning of education system. Teachers are the ones who interpret the objectives, contents, skills, in short, all the elements in the curriculum. For this reason, teachers are required to understand and implement the curriculum in an accurate way. In this context, it is seen that teachers play a critical role in the understanding and appropriate implementation of the curriculum (Darling-Hammond, 2009; Thornton 2005; Park 2008). The teacher implements the existing program by tailoring and modifying it. Teachers with a high level of curriculum literacy transmit the course achievements by modifying it according to their students, school environment and expectations, and the social environment on the basis of the main framework. An appropriate interpretation and implementation increase the quality of education. In this study, English teachers' curriculum literacy levels and their views on the English curriculum were examined. The findings showed that English teachers' curriculum literacy levels were high in the sub-scales of knowing, planning and implementing the curriculum. There are similar studies with the present study in the literature. For example, Aslan (2018), Erdamar (2020), Şinego & Çakmak (2021), Sarıca (2021) revealed that curriculum literacy levels of in-service teacher were high. On the other hand, Kahramanoğlu (2019) found that in-service teachers had a medium level of curriculum literacy. In studies conducted with pre-service teachers, Erdem & Eğmir (2018) concluded that pre-service teachers had high levels of curriculum literacy, Kahramanoğlu (2019) found that their curriculum literacy level was medium, and Öztürk (2019) revealed that pre-service teachers had low levels of curriculum literacy. In addition to the aforementioned studies, Kauffman et al. (2002), Schwarz et al. (2008), Baştürk & Dönmez (2011), Hardman & Rahman (2014), Opoh & Awhen (2015), Gani & Mahjaty (2017), and Öztürk (2019) stated that teachers had lower levels of curriculum literacy levels. Altıntaş et al., (2018) and Öztürk (2019) obtained the same result in their studies in which they applied a scale to investigate curriculum literacy level of pre-service teachers. It can be argued that teachers with lover levels of curriculum literacy levels fail to interpret the curriculum and implement it in the classroom. The factors that lead to this situation may be teachers' inability to apply the curriculum and to support it with supplementary activities. In order to eliminate these insufficiencies, in-service

training should be offered to teachers. Supporting this view, Kauffman et al. (2002), Hardman & Rahman (2014), and Opoh & Awhen (2015) argued that teachers' interpretation and implementation of the curriculum are not sufficient, and thus in-service training is absolutely required to eliminate such a problem. In addition, Opoh & Awhen (2015) stated that teachers should be included in the curriculum development process to gain adequate experience so that they can implement the curriculum effectively.

A significant difference was not found between *knowing the program*, *planning* and *implementation* sub-scales of the Curriculum Literacy Scale and the gender. Consistent with the results of the present study, Aslan (2018), Erdem & Eğmir (2018), Tunçer & Şahin (2019), Dilek (2020), Sağ & Sezer (2012) and Gülpek (2020) did not find a significant difference in terms of gender. According to Şinego & Çakmak (2021), the reason of this indifference may be the fact that female and male teachers follow the updates and developments in their curriculums and fields. Similarly, Karakuş & Tümkaya (2015) and Tümkaya et al., (2014) stated that the gender factor did not play a significant role in the teaching profession. In addition, it is seen that gender have no effect on the professional development. Contrary to the findings of the present study, Eskiocak (2005) and Kahramanoğlu (2019) concluded that the Curriculum Literacy scores of female teachers were higher than those of male teachers. On the other hand, Erdamar (2020) found that the curriculum literacy levels of male classroom teachers were higher than that of female classroom teachers.

In the present study, a significant difference was not found between *knowing the program*, *planning* and *implementation* sub-scales of the Curriculum Literacy Scale and the school type. A similar finding was found by Keskin (2020) who concluded that curriculum literacy did not differ by school level. In contrast, Kahramanoğlu (2019) found that primary school teachers had higher levels of curriculum literacy than elementary school teachers in terms of knowing the curriculum and implementing it. On the basis of this result, it can be argued that primary school teachers were more successful in doing activities, preparing materials and adjusting the program according to the level of the students.

The examination of Curriculum Literacy Scale with regard to work experience did not reveal a significant difference in the sub-scales of *knowing the curriculum* and *planning*. On the other hand, a significant difference was found in *implementing* sub-scale. This difference was between participants having 1-5 years of work experience and those having 11-15 years of work experience in favor of the former, and between participants having 6-10 years of work experience and those having 11-15 years in favor of the former. Aslan (2018), Aydoğan (2018), Aslan and Gürlen (2019), Erdamar (2020), Kahramanoğlu (2019), Keskin (2020) did not find a significant difference between the curriculum literacy level of teachers and work experience. The results of the present study suggest that teachers having less work experience are more curriculum literate and better at implementing the curriculum. Supporting this view, Superfine (2008) argued that instead of sticking to a written plan, experienced teachers plan the lesson in their minds and act in accordance with their experiences.

In the qualitative part of the study, the views of English teachers on teaching English were examined. They that the program was sufficient to provide reading and listening skills and that the supplementary materials play a supportive role for these skills. Consistent with these findings, Teevno (2011) concluded that although the materials and source books for teaching English are sufficient, there are still some problems in language learning and four language skills, that are reading, writing, listening and speaking, are not acquired as it should be. On the other hand, some researchers argued that the materials and source books were insufficient which led to deficiencies in language teaching and learning (Arıbaş & Tok, 2004; Günday, 2007; Erdem, 2016; Songbatumis, 2017; Şahin et al., 2018; Çelebi & Narinalp, 2020). Similarly, Yaman (2019) concluded that the textbooks were not appropriate to students' level and this paved the way to prejudice against language. In addition, in a qualitative study conducted by Şad & Karaova (2015), it was concluded that teachers thought that the outcomes for listening skills in the curriculum were sufficient, but the textbooks were insufficient to achieve these outcomes. Furthermore, it was stressed that the classroom should have required conditions to carry out the listening activities. Contrary to the findings of the present study, Doğan &

Özçakmak (2014) reported that listening skill was neglected in teaching English. The fact that every books and supplementary materials were designed nationally on a general basis may be the reason for the participants' criticism regarding the insufficient resources. The development of resources suitable for the cultural, physical and socio-economic conditions of the regions and students' level can facilitate learning. Another reason was that the resources lacked one the four skills or all of them at once, which led to failure in acquiring four skills. In order to eliminate such a problem, it would be effective to use authentic materials and resources developed by native speakers of English. Aküzel (2006) and Çatal et al., (2018) sated that the coursebooks and supplementary books used in the lessons were not interesting, clear, appropriate for the level, sufficient to achieve the expected outcomes, and fun.

Another finding of the present study was that the curriculum was insufficient in providing speaking activities and the time constraint was a problem in teaching and learning English. The literature on the problems experienced while teaching English speaking skills shows that some of the factors that delay speaking skills are that the curriculum is not suitable, the structure of English differs in some languages, there is no opportunity to practice in a real environment, there is not enough knowledge regarding vocabulary, grammar and pronunciation, students do not have sufficient motivation, attitude and behavior towards speaking, and they are afraid of making mistakes. (Yaman, 2018; Leaño et al., 2019; Wahyuningsih & Afandi, 2020; Güneş & İskender, 2021). Similarly, Paker (2012) concluded that Turkey is insufficient in speaking skills. The studies in the literature clearly shows that one of the biggest problems is that foreign language speaking skills are not taught and learned satisfactorily. Accordingly, several results have been reported. In order to overcome this problem, first of all, pre-service English teachers should be provided with sufficient speaking skills during their university years, teachers should be given in-service training and they should use more communicative approach instead of classical grammar-based ones. In line with this view, Fareh (2010) suggested that although tremendous efforts were made to improve the English teaching-learning process, English curriculum failed to reach expected results, and low levels of learners' speaking skills were one of the reasons for this. Similarly, Sultana (2010) emphasized that it is very challenging for students having limited opportunity to use English in their social and classroom environments, that incompetent English teachers fail to teach English language skills, that the classes are not suitable for language learning standards, that classroom practices emphasize rote learning rather than understanding and using English in real-life situations. Advocating that teachers are not sufficient in speaking English, Teevno (2011) argued that teachers do not receive an appropriate education on how to teach English and this hinders a successful English speaking process.

It was found in the present study that the participants mostly used games, videos and songs in order to tailor the curriculum to interests and levels of the students. In this regard, Işık (2016) stated that educational games are important in teaching English vocabulary. In addition, Bayırtepe & Tuzun (2007) concluded that the games increased the motivation level of the students and increase their interest in the content. Besides, Aydın (2014) argued that the inclusion of different games on the basis of different intelligence types would lead to an increase in the motivation of all students. Similarly, Kahraman (2019) stressed that songs are an effective method that can be used to repeat the words introduced in the lesson. Similarly, Yetunde & Kate (2008) revealed the effects of word games, songs and poems on high school students' foreign language skills and stated that these activities motivate students better and increase their English performance. Furthermore, Griva & Semoglou (2012) argued that classroom creative activities including memory and word games, drawings, role-playing games, pantomimes and songs, physical activities such as races, chases and hopscotch in the gym to improve children's verbal communication skills and creativity, as well as many dance and music activities has a positive effect on developing pupil's language skills and increasing their motivation to participate in psychomotor activities. Examining the effect of video games on students' vocabulary acquisition, Vásquez and Ovalle (2019) concluded that the participants were able to acquire a significant amount of vocabulary after the games, and this experience increased the interaction of the participants in and out of the classroom. Considering the benefits of songs in terms of teaching both pronunciation and intonation skills, it can be put forward that using songs is an important teaching method. One of the most important dimensions of language teaching is teaching with fun and thus, teachers need to make

the lessons interesting. The fact that the game is a remarkable teaching aid for individuals of all ages can be leveraged while teaching a language. For this reason, it is very necessary for English teachers to have a good level of creativity and content knowledge.

Another finding of the present study was that the problems experienced by the teachers regarding the intensive curriculum and time constraints resulted in difficulties in language learning. The fact that the curriculum and class size are inversely proportional to the class hours is an important factor that makes learning difficult. Taking the same perspective, Günday (2007), Teevno (2011) and Songbatumis (2017), tried to reveal the deficiencies in English teaching. They concluded that the intensive and time-limited English curriculum had a negative effect on language learning. They stated that teachers needed well-designed resources and increased class hours in order to eliminate the deficiencies in the curriculum. Besides, Yusuk (2020) stated that the allocated time and classroom environment are not sufficient to learn a language. In addition, Oeamoum & Sriwichai (2020) put forward that the course hours for teaching English are limited, the content of the curriculum is not up-to-date and compatible with daily life, which should be eliminated. Similarly, Işık (2008) emphasized that the materials were insufficient, Günday (2007) and Sultana (2010) emphasized that the teaching materials designed on the basis of traditional grammar-based language teaching and lack of communicative materials led to failure in language learning. Similarly, Oeamoum & Sriwichai (2020) considered lack of different English teaching materials and supplementary resources as a deficiency and expressed that this problem can be reduced by integrating web-based technologies into English lessons. The fact that the number of English class hours is limited in schools paves the way to some problems. Teachers' hard work to implement the curriculum within such a limited time period leads them to ignore some aspects or skills while teaching four skills.

In sum, the results of the present study showed that although the participants had high levels of curriculum literacy, they had problems in teaching four language skills, that are reading, writing, listening and speaking. They mentioned the lack of resources, the intensive curriculum, insufficient class hours, and the insufficient curriculum content as the reasons for these problems. The participants' high levels curriculum literacy indicates that they have high levels of awareness as well. It can be concluded that the ability of teachers to interpret the curriculum, to realize the positive or negative aspects of the curriculum, to develop alternative assessment and evaluation methods, and to develop alternative methods to the methods and techniques included in the curriculum are related to their curriculum literacy levels.

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International Journal of Progressive Education, Volume 18 Number 4, 2022

A Meta-Evaluation Research on Teacher Training Programs in Türkiye*

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Abstract

The purpose of this research is to make a meta-evaluation of the program evaluation studies on teacher training programs in Turkey. Meta-evaluation is the process of revealing the deficiencies and errors of the research as the last stage of the program evaluation process. In this context, the steps of the meta-evaluation processes were followed methodically. In the in this research, 9 program evaluation studies conducted between 2010 and 2020 about teacher training programs, using any program evaluation approach and model, were meta-evaluated. The sampling method of the research is criterion sampling.. Research data was collected using the "*Program Evaluation Standards Checklist* developed by the researchers. During the development of the relevant data collection tool, the *Program Evaluation Standards* created by the Joint Committee on Standards for Educational Evaluation (JCSEE) were benefited. The studies included in the research were examined by 6 program experts who formed the meta-evaluation team. Each expert evaluated 3 studies using the checklist. Research data was analyzed using descriptive analysis method. Research findings indicate that the examined program evaluation studies meet the program evaluation standards by 55.67%. From this point, some suggestions that are believed to contribute to future program evaluation and meta-evaluation studies on teacher training were presented.

Key words: Meta-Evaluation, Program Evaluation, Teacher Training, Evaluation Standards, Program Standards.

DOI: 10.29329/ijpe.2022.459.15

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* This study was an oral presentation in "International Pegem Conference on Education", Diyarbakır, Türkiye, 16 -18 September 2020.

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INTRODUCTION

Evaluation has always been a part of the school. Although evaluation in education is known as a process carried out especially in classrooms, one of its main interlocutors is the program developer. Related program experts make use of evaluation processes to reveal the quality of the program. The effective execution of educational activities in different fields and levels is directly related to the quality of the applied program. Moreover, the quality of the programs depends on the effective execution of the development and evaluation processes. Although there are different approaches, program development is generally expressed as all the processes carried out in the light of scientific processes to make the curriculum effective (Demirel, 2014; Null, 2011; Ornstein & Hunkins, 2018; Ornstein & Levine, 2008). Program evaluation, on the other hand, is defined as determining the extent to which the program meets the features that it should have using the same scientific processes and to make various decisions about the program (Fitzpatrick, Sanders, & Worthen, 2011; Madaus, Stufflebeam, & Scriven, 2000; Mertens, & Wilson, 2019; Stufflebeam, & Coryn, 2014; Uşun, 2012; Yüksel & Sağlam, 2014).

While the evaluations carried out within the school focus more on student success, the evaluation of the program is a comprehensive process that expresses the systematic evaluation of the entire school system (Nevo, 2002). Teachers, on the other hand, are the main practitioners of educational activities in the school systems. In this respect, the role of teachers and teacher training programs in school systems where different programs are developed and evaluated is indisputably very important (Bullough, 1992). This means that the teachers have a key role in the effective implementation and success of the developed programs. The importance of teacher training and quality is emphasized to ensure the continuity of a program developed in various studies (LaChausse, Clark, & Chapple, 2014; Valcke, Rots, Verbeke, & Van Braak, 2007). In this respect, the high quality of teacher-training programs is a great necessity for the teachers, who are the output of these programs, to be able to carry out the current programs effectively.

Perhaps the most well-known purpose of a developed program is to increase the quality of education as much as possible in the field it is developed. This is directly related to the nature of the program. It is important to employ formal processes to make the right decisions about the nature and future of the program. Formal evaluations are valid and reliable evaluations with a certain systematic, purpose, place, time, and address (Fitzpatrick, et al., 2011). Such evaluations, defined as *Improvement/Accountability Oriented Approaches*, are comprehensive and expensive evaluations that consider all the questions and criteria required to evaluate the success of a program (Stufflebeam, 1999). This is an indicator of major financial risks that may arise if the program evaluation processes are not carried out correctly. This causes the quality of the program evaluation processes questionable as well as the quality of the program. The quality of these processes can be revealed through meta-evaluations. Scriven (2009) states that he first invented the concept of meta-evaluation, which he defined as the evaluation of evaluation, shortly before he included it in an article in 1969. Stufflebeam (2000) defines meta-evaluation as the process of identifying, obtaining, and using descriptive and judgmental information about an evaluation, such as its usefulness, feasibility, relevance, and accuracy, to publicly report on the strengths and weaknesses of that evaluation. Meta-evaluation has been used to reveal the quality of evaluations and practices in many different fields such as economy, employment, environment, children's rights, and fight against addiction studies (Alexakis, 2020; Chapman, 2012; Léveillé, & Chamberland, 2010; Pediaditi, Doick, & Moffat, 2010; Windsor, Boyd, & Orleans, 1998). The focus of this study is the quality of various evaluations made in the context of education and program.

The quality of program evaluation research is directly related to whether they are conducted according to certain standards. In this context, studies were carried out by the 1980 Joint Committee on Standards for Educational Evaluation (JCSEE) and in 1981 a document consisting of 30 standards was published to guide the evaluation process of educational programs, projects, and materials and to judge the soundness of such evaluations (Fournier, 1994; Stufflebeam, & Madaus, 1983). In the following years, these standards were developed and updated, and the 2nd and 3rd editions were

published under the title of *Program Evaluation Standards* (JCSEE, 2018). Most of the meta-evaluation studies in the international literature have tried to reveal the quality of the evaluations with the help of these standards since the 1980s. In 2010, the Committee benefited from national and international reviews and field research, involving more than 400 stakeholders from different countries, to develop the most up-to-date version of program evaluation standards (JCSEE, 2018). These standards have been developed within Western Michigan University and have been transformed into different checklists prepared by famous scientists in the field of program evaluation such as Michael Scriven, Daniel Stufflebeam, Robert Stake, Michael Quinn Patton, Egon Guba, Ernest R. House (WMU, 2020).

Program Evaluation Standards have been prepared in a way that considers each stage, from the beginning of evaluation research till the end of the process, to reveal the quality of the research and evaluation. These standards consist of a total of 30 standards under 5 headings as utility, feasibility, propriety, accuracy, and accountability standards. The main features of these standard fields are as follows (JCSEE, 2018):

> **Utility Standards:** Aims to increase the awareness of the program stakeholders about the importance of evaluation processes and products in meeting their needs.
>
> **Feasibility Standards:** Aims to increase evaluation effectiveness and efficiency.
>
> **Propriety Standards:** Supports what is appropriate, fair, legal, right, and just in evaluation.
>
> **Accuracy Standards:** Aims increase reliability and accuracy of descriptions, suggestions, and findings that support comments and judgments, especially about quality of evaluation.
>
> **Evaluation Accountability Standards:** Encourages adequate documentation for evaluation and a meta-evaluation perspective that focuses on improvement and accountability in evaluation processes and products (p. 1-3).

Although a complete meta-evaluation involving research design, data collection, data analysis, and checking or reconsidering results is rarely done, it is very important to examine even just one of these elements (Scriven, 2009). In this respect, international literature shows that the number of meta-evaluation studies conducted in the context of the program is quite limited. Despite this limitation, it is possible to see that studies using this method, which was put forward in the late 1960s, in the context of program evaluation, were more preferred especially after the 1980s, when the interest in program evaluation standards increased (Ardisson, Smallheer, Moore & Christenbery, 2015; Usmani, Khatoon, Shammot & Zamil, 2012; Scott-Little, Hamann & Jurs, 2002; Finn, Stevens, Stufflebeam & Walberg, 1997; Georghiou, 1995; Odom & Fewell, 1983). Although their number is limited, there are various studies under the heading of meta-evaluation in Turkey. Yasar, Gultekin, Kose, Girmen & Anagun (2005) conducted a meta-evaluation study on the evaluation studies on primary school teacher training programs in Turkey between 1997 and 2004. Yüksel & Akın (2013) conducted a meta-evaluation study on the Student Success Determination Exam. Yağan (2019) on the other hand, conducted a meta-evaluation study on Ph.D. dissertations published on program evaluation in Turkey. Akıncı & Köse (2021) stated that program evaluation studies in Turkey are carried out most frequently at the undergraduate level, in terms of the field, teacher training programs were evaluated most, and these studies have various problems in different dimensions. In this context, the adaptation of the Program Evaluation Standards developed by the Joint Committee on Standards for Educational Evaluation (JCSEE) into Turkish to carry out the program evaluation studies according to the standards accepted in the international literature in the

following years and to conduct meta-evaluation studies with the checklist prepared using these standards might be the solution for this problem.

Purpose of the Research

The purpose of this research is to make a meta-evaluation of the program evaluation studies on teacher training programs in Turkey. Under this general-purpose, answers to the following questions were sought in the study:

- How well do the reviewed studies meet the program evaluation standards?
    - According to standard types,
    - According to standard items,
    - According to program types,
    - According to research types.

The study is important in terms of revealing the quality of program evaluation research, which has become widespread in the national literature in recent years, in the context of teacher training programs. Thus, it is believed that the study will contribute to the conduct of more planned and standardized program evaluation studies.

METHOD

Research Design

This study is a meta-evaluation research. Meta-evaluation is the process of revealing the deficiencies and errors of the research as the last stage of the program evaluation process (Cooksy & Caracelli, 2009; Scriven, 2011). In this context, the steps of the meta-evaluation processes were followed methodically in the research. These steps are as follows (Stufflebeam, 2000):

1. Determine and arrange to interact with the meta evaluation's stakeholders.
2. Establish a qualified meta evaluation team.
3. Define the meta evaluation questions.
4. Agree on standards to judge the evaluation system or particular evaluation.
5. Negotiate the meta evaluation contract.
6. Collect and review pertinent available information.
7. Collect new information as needed, including, for example, on-site interviews, observations, and surveys.
8. Analyze the qualitative and quantitative information and judge the evaluation's adherence to the selected evaluation standards.
9. Prepare and submit the needed reports.
10. Help the client and other stakeholders interpret and apply the findings. (p. 461).

The above stages were used in the processes of establishing the meta-evaluation team, selecting the study to be examined and the standards to be used, collecting, analyzing, and reporting the data.

Examined Research Papers

In the study, program evaluation studies conducted between 2010 and 2020 about teacher training programs were evaluated. Another criterion in the selection of program evaluation studies examined in the research was program evaluation approaches and models. Among the studies under the title of program evaluation, those using any of the program evaluation approaches and models were included in the study. Since the mentioned criteria were used in the study, the sampling method was expressed as criterion sampling. Because the criterion sample is valid in all cases that meet a predetermined set of criteria (Yıldırım & Şimşek, 2013). From databases such as Dergipark, National Thesis Center, ULAKBİM, Tr Index, Web of Science (WOS), EBSCO, ERIC, Elsevier, and Google Academic, 9 program evaluation studies meeting these criteria were reached. The distribution of the examined studies by years is presented in Figure 1.

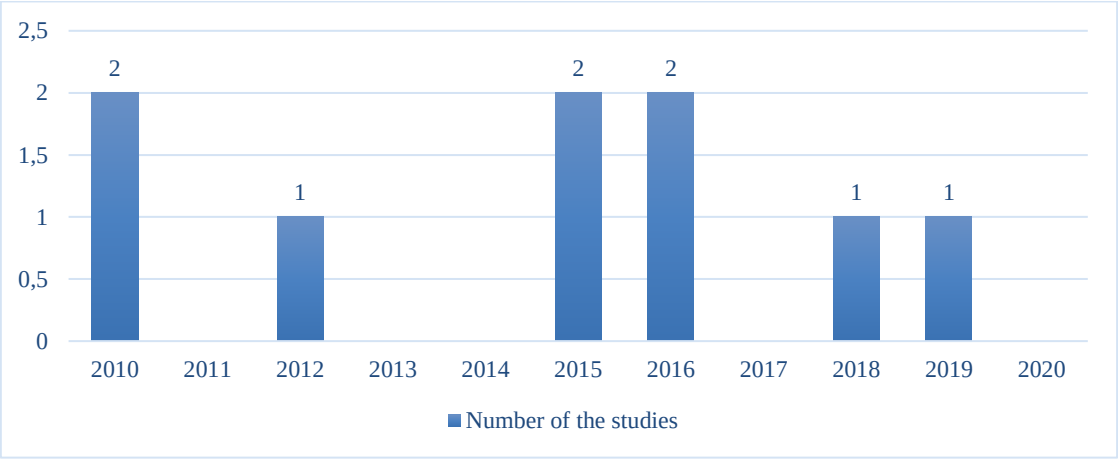

Figure 1. Distribution of the Studies by Years

Figure 1 shows that studies using any program evaluation approach and model in the evaluation of teacher training programs are limited to an average of 1 or 2 studies per year. Even in some years, studies that meet the mentioned criteria about teacher training programs have not been conducted. The distribution of the studies according to the program evaluation models is shown in Figure 2.

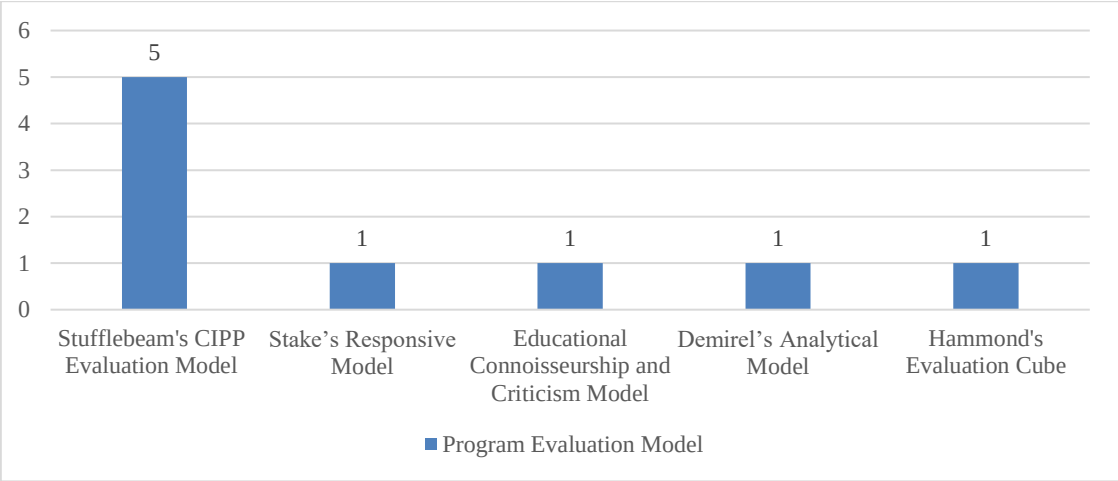

Figure 2. Distribution of Studies According to Program Evaluation Models

Figure 2 indicates that Stufflebeam's CIPP Model was preferred in five of the nine studies meta-evaluated. Apart from this model, four different models were preferred in the evaluation of teacher training programs.

Data Collection and Analysis Procedure

Research data was collected using the "*Program Evaluation Standards Checklist* developed by the researchers. During the development of the relevant data collection tool, the *Program Evaluation Standards* created by the Joint Committee on Standards for Educational Evaluation (JCSEE) were considered. The relevant standards were translated into Turkish, and the opinions of two foreign language education experts for translation and two program experts for conceptual relevance were obtained. The translated standards were transformed into checklist items, and the opinions of two measurement and evaluation experts were obtained on the structure of the items. The checklist was finalized with 30 items. Cohen Kappa coefficient was calculated as 0.81 for consistency among experts who analyzed the items. The Kappa coefficient ranges from -1 to +1, and as it gets closer to +1, it indicates that the random agreement for consistency among experts decreases (Fleiss and Cohen 1973). In addition, the standards expressed as *Evaluation Accountability Standards* were not included in the checklist during the meta-evaluation. This is because the relevant standards are related to whether meta-evaluation has already been done.

The studies included in the research were examined by 6 program experts who formed the meta-evaluation team. Each expert evaluated 3 studies using the checklist. Thus, each research was evaluated twice by different experts for consistency. Experts marked "yes" in the checklist if the study under review meets the relevant standard, and "no" if it does not. If there is not enough information about the relevant standard in the study, the "insufficient information" option was selected. Moreover, the experts in the meta-evaluation team were composed of individuals who have Ph.D. degrees in curriculum and instruction and have studies on program evaluation. Of the relevant experts, 2 are female and 4 are male, and 1 has the title of professor, 2 has associate professor, and 3 of has the title of doctor. In the analysis of the research data, the descriptive analysis method was used, and the findings were presented as descriptive statistics.

FINDINGS

The research findings addressed the extent to which the meta-evaluated studies met the program evaluation standards in terms of the standard types and items, the type of study, and the type of program evaluated. In this context, the descriptive statistics regarding the extent to which the studies examined meet the program evaluation standards are presented in Table 1.

Table 1. Descriptive Statistics Regarding the Level of Meeting the Program Evaluation Standards of the Examined Studies

Studies Reviewed	Research 1				*Total*		Research 2				*Total*	
Reviewing Experts	Expert 1		Expert 2				Expert 1		Expert 2			
	f	*%*	*f*	*%*	*f*	*%*	*f*	*%*	*f*	*%*	*f*	*%*
Yes	22	73,3	20	66,7	21	70	18	60	14	46,7	16	53,3
No	3	10	4	13,3	3,5	11,7	5	16,7	10	33,3	7,5	25
Insufficient Info	5	16,7	6	20	5,5	18,3	7	23,3	6	20	6,5	21,7
Studies Reviewed	Research 3				*Total*		Research 4				*Total*	
Reviewing Experts	Expert 1		Expert 2				Expert 3		Expert 4			
	f	*%*	*f*	*%*	*f*	*%*	*f*	*%*	*f*	*%*	*f*	*%*
Yes	14	46,7	12	40	13	43,3	19	63,3	18	60	18,5	61,7
No	7	23,3	11	36,7	9	30	3	10	12	40	7,5	25
Insufficient Info	9	30	7	23,3	8	26,7	8	26,7			4	13,3

Studies Reviewed	Research 5				*Total*		Research 6				*Total*	
Reviewing Experts	Expert 3		Expert 4				Expert 3		Expert 4			
	f	*%*	*f*	*%*	*f*	*%*	*f*	*%*	*f*	*%*	*f*	*%*
Yes	18	60	13	43,3	15,5	51,7	21	70	17	56,7	19	63,3
No	3	10	5	16,7	4	13,3	2	6,7	4	13,3	3	10
Insufficient Info	9	30	12	40	10,5	35	7	23,3	9	30	8	26,7
Studies Reviewed	Research 7				*Total*		Research 8				*Total*	
Reviewing Experts	Expert 5		Expert 6				Expert 5		Expert 6			
	f	*%*	*f*	*%*	*f*	*%*	*f*	*%*	*f*	*%*	*f*	*%*
Yes	18	60	18	60	18	60	15	50	18	60	16,5	55
No	2	6,7	6	20	4	13,3	6	20	6	20	6	20
Insufficient Info	10	33,3	6	20	8	26,7	9	30	6	20	7,5	25
Studies Reviewed	Research 9				*Total*		TOTAL					
Reviewing Experts	Expert 5		Expert 6					f		%		
	f	*%*	*f*	*%*	*f*	*%*	*Yes*	16,7		55,67%		
Yes	12	40	13	43,3	12,5	41,7	*No*	5,9		19,67%		
No	7	23,3	11	36,7	9	30	*Insufficient Info*	7,4		24,67%		
Insufficient Info	11	36,7	6	20	8,5	28,3	Total	30		100,00%		

Table 1 shows that the meta-evaluated studies met the program evaluation standards by 55.67%. While the related studies do not meet the program evaluation standards by 19.67%, it was observed that insufficient information is given at the rate of 7.4% regarding various standards in some studies. According to the studies examined study 1 meets the relevant standards at the highest level at 70%, while Study 9 meets the lowest level at 41.7%. The findings regarding the extent to which the examined studies meet the relevant standards according to standard types and on the basis of items are presented in Table 2.

Table 2. Descriptive Statistics Regarding the Level of Meeting the Relevant Standards According to Standard Types and Items

Items	Utility Standards																		*Total*	
	1.		2.		3.		4.		5.		6.		7.		8.		9.			
	f	*%*	*f*	*%*	*f*	*%*	*f*	*%*	*f*	*%*	*f*	*%*	*f*	*%*	*f*	*%*	*f*	*%*	*f*	*%*
Yes	16	88,9	8	44,4	10	55,6	1	5,6	8	44,4	8	44,4	13	72,2	14	77,8	15	83,3	10,3	57,2
No	2	11,1	10	55,6	3	16,7	3	16,7	4	22,2	2	11,1	2	11,1	1	5,6	1	5,6	3,1	17,2
Insufficient Info	-	-	-	-	5	27,8	14	77,8	6	33,3	8	44,4	3	16,7	3	16,7	2	11,1	4,6	25,6

Items	Feasibility Standards								*Total*	
	10.		11.		12.		13.			
	f	*%*	*f*	*%*	*f*	*%*	*f*	*%*	*f*	*%*
Yes	7	38,9	6	33,3	3	16,7	11	61,1	6,8	37,8
No	7	38,9	12	66,7	1	5,6	-	-	5	27,8
Insufficient Info	4	22,2			14	77,8	7	38,9	6,2	34,4

Items	Propriety Standards																*Total*	
	14.		15.		16.		17.		18.		19.		20.		21.			
	f	*%*	*f*	*%*	*f*	*%*	*f*	*%*	*f*	*%*	*f*	*%*	*f*	*%*	*f*	*%*	*f*	*%*
Yes	15	83,3	2	11,1	1	5,6	16	88,9	15	83,3	15	83,3	1	5,6	9	50	9,3	51,7
No	-	-	4	22,2	2	11,1	-	-	-	-	2	11,1	-	-	-	-	1	5,5
Insufficient Info	3	16,7	12	66,7	15	83,3	2	11,1	3	16,7	1	5,6	17	94,4	9	50	7,7	42,8

Items	Accuracy Standards																		*Total*	
	22.		23.		24.		25.		26.		27.		28.		29.		30.			
	f	*%*	*f*	*%*	*f*	*%*	*f*	*%*	*f*	*%*	*f*	*%*	*f*	*%*	*f*	*%*	*f*	*%*	*f*	*%*
Yes	7	38,9	16	88,9	17	94,4	10	55,6	13	72,2	15	83,3	5	27,8	13	72,2	11	61,1	11,9	66,1
No	-	-	2	11,1	1	5,6	8	44,4	5	27,8	3	16,7	13	72,2	5	27,8	1	5,6	4,2	23,3
Insufficient Info	11	61,1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6	33,3	1,9	10,6

Table 2 shows that the level of meeting the program evaluation standards of the studies examined according to standard types varies between 37.8% and 66.1%. The standard type in which the program evaluation standards are met the highest is Accuracy Standards with 66.1%, and Feasibility Standards are the lowest with 37.8%. In addition, the 4 standards that are met at the highest level in the studies are respectively:

24. Information on evaluation in research supports valid interpretations of program evaluation.

1. The research was conducted by qualified people who proved themselves in evaluation.

17. Evaluation processes in the research were designed and carried out in a way to protect human and legal rights and ensure the dignity of participants and other stakeholders.

23. Information about evaluation in research serves the intended purposes.

The 4 standards that are met at the lowest level in the studies are respectively:

4. In the evaluation processes of the research, the personal and cultural values that form the basis of the purposes, processes, and judgments are clearly expressed.

16. Agreements made during the evaluation processes in the research were negotiated in a way considering the needs, expectations, and cultural contexts of all stakeholders benefiting from and affected by the program.

20. In the evaluation processes of the research, actual or anticipated conflicts of interest that could cast a shadow on the evaluation were clearly and honestly defined and eliminated.

15. Agreements made during the evaluation processes of the research were negotiated with all stakeholders benefiting from and affected by the program to clarify their obligations.

The studies examined in the research were divided into 3 groups as studies in the fields of primary education programs, teaching practice, and professional teaching knowledge courses, considering the programs they evaluated. Table 3 shows the findings regarding the extent to which program evaluation studies meet the relevant standards, according to the type of programs evaluated.

Table 3. Descriptive Statistics of Program Evaluation Studies on the Level of Meeting the Standards According to Program Types

Studies Evaluating Teaching Practice Couse Programs														
Studies Reviewed	Study 1				Study 2				Study 3				Total	
Reviewing Experts	Expert 1		Expert 2		Expert 1		Expert 2		Expert 1		Expert 2			
	f	%	f	%	f	%	f	%	f	%	f	%	f	%
Yes	22	73,3	20	66,7	18	60	14	46,7	14	46,7	12	40	16,6	55,4
No	3	10	4	13,3	5	16,7	10	33,3	7	23,3	11	36,7	6,7	22,3
Insufficient Info	5	16,7	6	20	7	23,3	6	20	9	30	7	23,3	6,7	22,3
Studies Evaluating Professional Teaching Knowledge Programs														

Studies Reviewed	Study 4				Study 5				Study 6				Total	
Reviewing Experts	Expert 3		Expert 4		Expert 3		Expert 4		Expert 3		Expert 4			
	f	%	f	%	f	%	f	%	f	%	f	%	f	%
Yes	19	63,3	18	60	18	60	13	43,3	21	70	17	56,7	17,7	59
No	3	10	12	40	3	10	5	16,7	2	6,7	4	13,3	4,8	16
Insufficient Info	8	26,7			9	30	12	40	7	23,3	9	30	7,5	25
Studies Evaluating Primary Education Programs														
Studies Reviewed	Study 7				Study 8				Study 9				Total	
Reviewing Experts	Expert 5		Expert 6		Expert 5		Expert 6		Expert 5		Expert 6			
	f	%	f	%	f	%	f	%	f	%	f	%	f	%
Yes	18	60	18	60	15	50	18	60	12	40	13	43,3	15,7	52,3
No	2	6,7	6	20	6	20	6	20	7	23,3	11	36,7	6,3	21
Insufficient Info	10	33,3	6	20	9	30	6	20	11	36,7	6	20	8	26,7

Table 3 indicates that the total scores regarding the level of meeting the program evaluation standards of all studies in terms of the type of program evaluated are between 52.3% and 59%. Studies evaluating the programs of professional teaching knowledge courses are the studies that meet the related standards to 59% at the highest level. The studies that meet the evaluation standards at the lowest level according to the type of program evaluated are the studies that evaluate the primary education programs with 52.3%. Table 4 shows the findings regarding the extent to which program evaluation studies meet the relevant standards, according to research types. In this context, the studies examined are grouped as PhD dissertations master's theses, and articles.

Table 4. Descriptive Statistics on the Level of Meeting the Relevant Standards of Program Evaluation Researches by Research Type

Studies Reviewed	PhD Dissertations													
Reviewing Experts	Study 1		Study 2		Study 4		Study 6		Study 7		Study 8		*Total*	
	f	*%*	*f*	*%*	*f*	*%*	*f*	*%*	*f*	*%*	*f*	*%*	*f*	*%*
Yes	21	70	16	53,3	18,5	61,7	19	63,3	18	60	16,5	55	18,2	60,7
No	3,5	11,7	7,5	25	7,5	25	3	10	4	13,3	6	20	5,2	17,3
Insufficient Info	5,5	18,3	6,5	21,7	4	13,3	8	26,7	8	26,7	7,5	25	6,6	22
Studies Reviewed	Master's Theses						Article							
Reviewing Experts	Study 3		Study 9		*Total*		Study 5		*Total*					
	f	*%*	*f*	*%*	*f*	*%*	*f*	*%*	*f*	*%*				
Yes	13	43,3	12,5	41,7	12,8	42,7	15,5	51,7	15,5	51,7				
No	9	30	9	30	9	30	4	13,3	4	13,3				
Insufficient Info	8	26,7	8,5	28,3	8,2	27,3	10,5	35	10,5	35				

Table 4 shows that the total scores regarding the level of meeting the program evaluation standards of all studies vary between 42.7% and 60.7% according to the research type. According to the study type, the studies that meet the evaluation standards at the highest level are PhD dissertations with 60.7%, and the ones that meet the lowest level are master's theses with 42.7%.

DISCUSSION, CONCLUSION AND RECOMMENDATIONS

The rapid change and development process that takes place in every field in the world also affects the understanding of education. It is thought that the breakthroughs made by developed and developing countries in recent years will also affect the education systems and this effect will also be reflected in the program development and evaluation processes (Stockmann & Meyer, 2016). Today, many countries have focused on the quality of evaluations, which are the decision-making process about the programs, as well as the quality of the education system and programs to keep up with this change (Astbury, 2016). The main purpose of this approach, called meta-evaluation, is to publicly

report the strengths and weaknesses of the evaluation (Scriven, 2009; Stufflebeam, 2000). For this purpose, program evaluation studies carried out on teacher training in Turkey between the years 2010-2020 were meta-evaluated.

The research findings show that the evaluation studies on teacher training programs meet the program evaluation standards adopted in the research at a rate of 55.67%. Yağan (2019) in her study similarly found that various standards were not adequately met in the program evaluation studies she examined. The standard type in which the program evaluation standards are met at the lowest rate is the Feasibility Standards. Evaluation results show that this standard type is met at a very low level of 37.8%. However, Feasibility Standards are about the effectiveness and efficiency of the evaluation (JCSEE, 2018). Effective and efficient program evaluations require the use of methodically practical and economical processes. This situation makes it questionable whether the right choices are made methodologically in the program evaluation studies on teacher training programs. It was stated in different studies that there are problems related to methodological preferences in studies on education programs in Turkey (Kozikoğlu & Senemoğlu, 2015; Ozan & Köse, 2014). On the other hand, the Accuracy Standards are the type of standards that are met at the highest level with 66.1%. Accuracy Standards aim to increase the reliability and accuracy of descriptions, recommendations, and findings that support comments and judgments on evaluation, especially about quality (JCSEE, 2018). Meeting these standards regarding scientific ethics at the highest level might be considered a positive situation. However, it is also important that the researches are to be feasible as much as being ethical, valid, and reliable.

The items that meet the program evaluation standards at the highest level are related to the conduct of studies by experts in the field, within the framework of ethical rules, and in a way that serves its purpose. In addition, the lowest met standards in the study focused on the concepts of cultural values, interests, contexts, and conflicts of interest. Akıncı (2021) reached similar findings in his study and as a possible reason, he showed that cultural and contextual features are not considered sufficiently in the program development processes carried out centrally in Turkey.

When the relevant studies are examined based on program type, it was observed that the studies evaluating the programs of professional teaching knowledge courses meet the program evaluation standards at the highest level, and the studies evaluating the primary education programs at the lowest level. The reason for this might be that the studies evaluating primary education programs try to evaluate all the courses of an undergraduate program at once. In addition, the researches that meet the evaluation standards according to study type at the highest level are doctoral theses, while those that meet the lowest level are master's theses. Stufflebeam (1999) stated that program evaluation studies are comprehensive and require expertise. PhD dissertations might be meeting the relevant standards for this reason. Moreover, evaluation studies on teacher training programs mostly consist of PhD dissertations and master's theses. Akıncı & Köse (2021) reached similar findings of the insufficient number of articles on program evaluation. This situation might be associated with not preferring the studies that require time and effort. Akcan, Malkoç & Kızıltan (2018) stated that there are serious problems in the approach to research in Turkey and that academic culture focuses on education rather than scientific research. Adherence to the CIPP Model of Stufflebeam to a large extent in the studies examined may also be an indication that methods and models that require time and effort are not preferred in program evaluation. Because Stufflebeam's CIPP Model was designed to provide ease of application for different types of researchers in program evaluation (Stufflebeam & Coryn 2014). It was stated in different studies that this model has been widely used in program evaluation in Turkey (Akıncı & Köse, 2021; Kurt & Erdoğan 2015; Özüdogru, 2018).

As a result, the fact that the examined studies meet the program evaluation standards by approximately 55% makes the quality of these studies questionable. There are already studies that draw attention to the problems related to the quality of scientific research conducted in Turkey (Erdoğan, 2001; Ak & Gülmez, 2006 Toy & Tosunoğlu, 2007). When considered in terms of standard types, while focusing on being valid and reliable, there are program evaluations whose feasibility level is decreasing. In addition, the evaluation of an entire undergraduate program as a thesis work or the

fact that the program evaluation is carried out by researchers who have just entered the field at the master's level may prevent meeting the required standards. From this point of view, some suggestions that are thought to contribute to future program evaluation and meta-evaluation studies are as follows:

- The variety of qualitative and quantitative data collection tools should be increased in program evaluation studies, and the focus should be on the feasibility as well as focusing on the methodological validity and reliability of the researches.

- Expanding the use of program evaluation approaches and models may be useful for conducting systematic evaluation research. In this context, program evaluation studies should be conducted in the light of the approach, model, and standards developed and adopted in line with the needs of the Turkish education system.

- It is difficult for program evaluation research to be conducted as a master's thesis because it is extensive and expensive. Therefore, it may be more effective and efficient to conduct related studies at the PhD level or by a group of researchers.

- Different researchers should carry out meta-evaluation studies on the quality of program evaluation studies conducted in various contexts.

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International Journal of Progressive Education, Volume 18 Number 4, 2022

Self-Regulated Learning Strategies Used by Students to Prepare Mathematics Exams

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Abstract

This study aims to determine self-regulated learning strategies used by students to prepare for mathematics lesson exams. The data were collected from high- and low-achievement students considering their general grade point averages and grade point averages in mathematics courses. The students were enrolled in the 7th grade of two different middle schools during the time of data collection. Case study method, which is a qualitative research approach, was used in this study. Data were collected with an interview form containing questions on potential sample events and situations that students may encounter while preparing for mathematics lesson exams. Descriptive analysis method was utilized for data analysis. Considering students' mathematics achievement and academic averages, it was concluded that the high-achievement students used all the strategies more or less, but the low-achievement students used only some of these strategies. According to the findings, these self-regulated learning strategies that used by low-achievers determined as self-assessment, seeking information and help, environmental regulation, and reviewing notes before maths exams.

Keywords: Self-Regulation Learning; Self-Regulation Learning Strategies; Mathematics Exams; Student Academic Achievement

DOI: 10.29329/ijpe.2022.459.16

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INTRODUCTION

It is significant for learners to organize their study methods, determine strategies, and gain awareness of the extent to which they have learned the subject under study. Acquiring such awareness at an early age enables learners to know how they learn new information, what they do to learn and understand, what they have to do, and at which level they can position themselves. Students' self-awareness and self-regulation regarding what and how they learn are significant skills emphasized in raising individuals, who are high-achievers, confident, and who have good time management both at school and in daily life.

"Self-regulated learning skills" are considered to be significant according to researchers due to its role in academic success (McCardle, Webster, Haffey, & Hadwin, 2017; Pintrich, 2004; Zimmerman, 1986). According to the social cognitive theory, which was influential in introducing the concept of self-regulation to the framework of education, self-regulated learning is a process in which learners set goals for their learning; monitor, evaluate and, if necessary, organize their knowledge, motivation, and behavior to achieve these goals (Zimmerman, 1989; Zimmerman & Schunk, 2001). In the self-regulated learning process, students should gain awareness on their learning behaviors and adjust their behaviors according to environmental conditions and employ different strategies. The self-regulation skill requires knowing various learning strategies that can be used in the learning process and using these strategies appropriately when necessary, and evaluating their effectiveness by monitoring the process (Sakız & Yetkin-Özdemir, 2014; Zimmerman & Schunk, 2001).

Zimmerman (1986) has revealed specific strategies employed in the learning process by the learners who possessed self-regulated learning skills. The majority of the other self-regulated learning models also include strategies used by students in the learning process and consider these strategies as significant. (Boekaerts, 1996; Pintrich, 2000; Winne & Hadwin, 1998; Zimmerman, 2000). According to Zimmerman (1989; 1990), all the processes included in the learning process by students who have self-awareness, and the ability to evaluate themselves and adjust their behaviors to acquire knowledge, skills, and success are called "self-regulation strategies". Zimmerman, Bandura, and Martinez-Pons (1992) analyzed these strategies in three dimensions by addressing them from a metacognitive, motivational, and behavioral perspective. According to their study, the students who have self-regulation skills and use the strategies (a) metacognitively; to set goals for themselves, organize studying plans to achieve these goals, determine the strategies to be used in the process, control, monitor, and evaluate the process; (b) motivationally; to cultivate intrinsic motivation taking into account the importance of achieving the goals and the returns (praise, success, awards, and so on.); (c) behaviorally; to create or choose the appropriate studying environment for learning to take place. Adding different dimensions to the self-regulated learning process, Zimmerman (1994, 1998), in his later studies, examined the concept in six dimensions and determined the strategies used in each dimension (Table 1).

Table 1. Dimensions of Self-Regulation and Strategies (Zimmerman, 1998)

Dimensions of Self-Regulation	Strategies
Motivational	Goal setting
	Self-Efficacy
	Self-judgement
Methodological	Task strategies
	Imagery
	Self-instruction
Time	Time management
Behavior	Self-monitoring
	Self-evaluation
	Behavior regulation
Environmental	Environmental structuring
	Noticing and removing distractions
Social	Selective help-seeking
	Choose partner, model or teacher

As Table 1 demonstrates, there are 14 strategies used by students in the self-regulated learning process, which consist of self-evaluation, organizing and transforming, goal-setting and planning, seeking information, keeping records and self-monitoring, environmental structuring, rewarding, rehearsing and memorizing, seeking social assistance, and reviewing notes and records (Sakız & Yetkin-Özdemir, 2014; Zimmerman and Pons, 1986; Zimmerman, 1998).

The success or failure of the students and the efficiency or inefficiency of the studying processes differ based on the self-regulation strategies used (Pape & Wang, 2003; Zimmerman & Martinez-Pons, 1986). Cognitive or metacognitive strategies used during studying play an essential role in the success of the learning process because it is much more important for students to study efficiently rather than studying for long hours (McCardle et al., 2017). Indeed, several studies show a positive correlation between the self-regulated learning strategies and students' success (Fuchs et al., 2003; Kaya, 2019; Turan, Demirel, & Sayek, 2009; Villavicencio & Bernardo, 2013; Zimmerman & Martinez-Pons, 1986). Fuchs et al. (2003) found that there is a significant relationship between the primary students' self-regulation strategies and their problem-solving performance. Villavicencio and Bernardo (2013) found a positive relationship between students' sense of achievement in trigonometry and the self-regulation strategies Similarly, Turan et al. (2009) pointed out that using self-regulated learning skills created a positive change in students' academic success. Zimmerman and Pons (1986; 1988) found that the frequency of using self-regulated strategies was different for high-achieving and low-achieving high school students. Some of the recent studies conducted in Turkey examined the relationship between the use of self-regulated learning strategies and motivation, academic success, self-efficacy, cognitive and metacognitive skills (Demir & Budak, 2016; Kaya, 2019; Özçakir Sümen & Çalışıcı, 2017; Üredi & Üredi, 2005). Kaya (2019) reported that motivation, self-regulated learning strategies, and metacognitive awareness of 246 seventh graders were significantly correlated with mathematics achievement. These variables explained 46% of the variance of mathematics achievement. In a study carried out with 158 eighth graders, Özçakir Sümen & Çalışıcı (2017) found that motivation and self-regulation strategies predicted mathematics achievement. Demir and Budak (2016) examined the relationship between the fourth graders' academic success in the mathematics class and their self-regulation strategies, metacognitive skills, and motivation. They suggested that motivation created the biggest impact on success, followed by self-regulation strategies and metacognitive skills, respectively. As the overall result of the studies, the self-regulated learning strategies used by students were found to be a significant factor affecting students' academic success.

Mathematics is known to be a subject that students struggle with and employ many strategies to be successful. Although there are many quantitative studies in the literature that demonstrate the positive relationship between self-regulation strategies and success, there is not a qualitative study that examines the link between strategies and written mathematics exams. In this context, the study's starting point is to reveal the strategies used by high-achieving students in mathematics. By determining the strategies employed by the high-achieving students in mathematics during their learning process, strategies which the low-achieving students lack can also be ascertained. Therefore, this study plays an important role in determining the strategic factors affecting the students' success or failure regarding the mathematics class and exams. Accordingly, the aim of the study is to reveal which of the self-regulated learning strategies determined by Zimmerman and Pons (1986) are employed by the high-achieving and low-achieving seventh graders during the preparation for mathematics exams. In this context, the research questions have been determined as follows:

- Which self-regulated learning strategies are used by high- and low- achieving students while studying for the math exams?

- How do the self-regulated learning strategies used for studying for mathematics exams differ between high- and low-achieving students?

METHOD

Research Model

Case study method, which is a qualitative research approach, was used in this study. Case studies focus on in-depth research of individuals' experiences and opinions based on a case or event. (Creswell & Poth, 2016; Patton, 2002). Considering the use of strategies by the students as a case, the appropriate research design in terms of the research questions was determined as a singular case. In singular case studies, the researcher focuses on an event or a problem and then selects a situation to unveil this problem or event (Creswell & Poth, 2016; Yin, 1994).

Research Sample

The study group included six students selected from the 7th graders of two different middle schools. In qualitative research, the sample size can be determined by the richness and depth of the data (Stake, 2000; Yin, 1994). According to Yin (1994), if the most comprehensive data about the case can be obtained from a single person, the sample of the data may even be a single person. We determined that we reached data saturation as we received recurring and similar responses based on the data collected from 10 students included in the main (6) and pilot (4) interviews. Criterion sampling, one of the purposive sampling methods, was used to select participants. In this method, the event, case, or people to be examined are selected according to certain criteria (Patton, 2002). In selecting students, their overall academic success and success in math courses were determined as the criteria. According to these criteria, the students whose academic average and mathematics lesson grades were high and low, in other words, high-achieving and low-achieving students were included in the study group. Of the six students in the study group, three students (Ö1, Ö2, Ö3) were categorized as high-achievers, while the other 3 (Ö4, Ö5, Ö6) were categorized as low-achievers. Considering the first written math exam grades in the fall semester of the 2019-2020 academic year, all the high-achieving students got 100 while the low-achieving students' grades got 30, 45, and 55. It was found that the students' grade point average (GPA) and final math grades in previous years were similarly high for the high-achieving students and low for the low-achieving students.

Data Collection Tools and Procedure

Data were collected through semi-structured interviews. By taking into account the self-regulated learning strategies determined by Zimmerman and Pons (1986), an interview form with 25 questions was prepared to conduct the in-depth interviews with the participants. The interview form was first presented to 5 researchers who expert in mathematics education and took courses in self-regulation and qualitative research at the mathematics education PhD level. After getting their critical reviews on the form, it was assessed objectively. Then, the content and construct validity of the form was established by a researcher who is an expert in self-regulated learning and qualitative research and observed the entire research process. According to the field expert's opinion, some questions were combined, and the form was condensed to 21 questions. The necessary corrections to this interview form were made by asking the expert's opinion on language and semantics. The interview form was given its final form following the pilot interviews carried out with two high-achieving and two low-achieving students selected through the criterion sampling method from schools. Several sample questions from the interview form are as follows:

"How many days before the exam did your teacher tell you the date of the math exam?"

"What did you feel when you learned the date?"

"Let's say, you have five days before the math exam, and you haven't done any preparations yet… What would you do?"

"If you didn't understand a topic while studying for the exam, what would you do first?"

Each student was informed that they would talk about "how they study for math exams" before the interviews. Interviews took approximately 35-40 minutes with each student. They were recorded by a voice recorder with the students' permission. The interviews took place in the school counselling service office, which was a quiet environment.

Data Analysis

The results were obtained by the descriptive analysis method used in qualitative research. The interview data in the voice recorder were first translated to text. Then, texts were analyzed by considering self-regulated learning strategies given in Table 2 determined by Zimmerman and Pons (1986). In the analysis process, the converted data were coded twice with two weeks interval by the researcher. Researcher triangulation was used to increase the research's reliability (Merriam, 2009). Following the researchers' coding, the coding was simultaneously presented to 5 researchers who specialized in mathematics education and took courses in self-regulation and qualitative research at the PhD level. An objective examination of the coding was ensured. Lastly, a lecturer who specialized in self-regulated learning and qualitative research was asked to examine the coding for researcher triangulation. Regarding the coding, 95% consensus between the researcher and the expert was observed. Consensus was reached after reviewing transcripts and audio recordings in cases of disagreement. Thus, the categories of self-regulation strategies were clarified, and the data were interpreted.

Table 2. Self-regulated Learning Strategies *(Zimmerman and Pons, 1986)*

Self-regulated Learning Strategies	Definitions of Strategies and Examples
1. Self-evaluation	Statements that show students' evaluation about the quality or progress of their work, for example, "I check my work to make sure I've done it right.", "That's the number of questions I got right on the exam."
2. Organizing and transforming information	Statements that show the instructional materials have been rearranged to improve open and latent learning, for example, "I prepare an outline before I write the final version of my essay.", "I underline the important parts about the subject."
3. Goal-setting and planning	Statements that show students' educational goals or sub-goal setting and plans for sorting, scheduling, and completing the activities related to these goals, for example, "I start studying and reading two weeks before the exams, then, speed myself up."
4. Seeking information	Explanations that show students' efforts to research as much information as possible during their duties such as doing assignments and studying for the exams, for example, "Before I start writing my term paper, I go to the library to obtain as much information as possible about the subject".
5. Keeping records (notes) and monitoring	Explanations that show students' efforts to record activities that they've initiated or results, for example, "I noted down the class discussion." "I kept a list of the words I got wrong."
6.Environmental conditions structuring	Explanations that show student's efforts to choose or organize the physical environment to facilitate learning, for example, "I turned off the radio so that I can focus on what I'm doing."
7. Reward (punishment)	Statements that keep students motivated and show the students' expectation of a reward or punishment they will get when they achieve or fail to achieve their goals, for example, "If I succeed in this exam, I can go to the cinema with my friends."
8. Rehearsing and memorizing	Explanations that show student's efforts to memorize the material with an open or latent practice, for example, "While preparing for a math exam, I keep writing until I can remember the formula."
9-11. Seeking social assistance	Explanations that show students' efforts to seek assistance from their teachers (9), friends (10), or adults (11), for example, "If I have problems studying math, I ask a friend for her/his help."
12-14. Reviewing notes and records taken during the class	Preparatory work such as student's rereading (12) notes or textbooks (13) or (14) solving questions from test books for the exam preparation, for example, statements such as "While preparing for the exam, I review my notes in my notebook."

Ethical

Validity and reliability studies in qualitative research are achieved by credibility, consistency (reliability), confirmability (certifiability), and transferability criteria (Stake, 2000). According to Creswell (2003), accuracy can be proved by observation of certain credibility strategies. Reducing researcher bias, participant confirmation, and triangulation were used to increase the credibility of this research (Başkale, 2016). Although researchers were aware that the relevant literature findings revealed that high-achieving students' self-regulation skills were at a reasonable level, researchers aimed not to be affected by the previous results not to project these findings on the present study. Thus, they listened to both the high-achieving and low-achieving participants with an open mind, and unbiased attitude; and did not make any changes in the data. After the interviews, the students' views were collected and summarized for the students, thereby attaining participant confirmation to make sure that the data were understood correctly. Researcher triangulation was used by taking the opinions of the researchers specializing in mathematics education. In terms of transferability of the research, the collected data were supported by the students' quotes, and thus detailed descriptive method was used. In addition, the purposive sampling method was used to recruit students who can be classified as high-achievers and low-achievers based on their GPA and mathematics lesson grades. Researcher triangulation, methods for reducing researcher bias, and participant confirmation were used to increase the research data's consistency (reliability) and confirmability (certifiability).

FINDINGS

In this section, the findings are sequentially presented in line with the research questions.

What are the Self-Regulated Learning Strategies used by High and Low Achieving Students?

The research findings have revealed that the students who can be classified as either high-achievers or low-achievers considering their academic averages use almost all self-regulated learning strategies while studying. It was found that self-regulation strategies, used by all the high-achieving students, were not sufficiently used by the low-achieving students as demonstrated in Table 3. Findings indicate that the low-achieving students used strategies such as self-evaluation, seeking information, environmental structuring, seeking assistance from the social environment, and reviewing notebooks before the exams. According to the findings, the low-achieving students did not use the main strategies that support self-regulated learning, such as organizing and transforming information, goal-setting, planning, and so on.

Table 3. Use of Self-Regulated Learning Strategies

Self-Regulated Learning Strategies	High-achieving Students			Low- achievingStudents		
	S1	S2	S3	S4	S5	S6
1. Self-evaluation	√	√	√	√	√	√
2.Organizing and transforming information	√	√	√	-	-	-
3. Goal-setting and planning	√	√	√	-	-	-
4. Seeking information	√	√	√	√	√	√
5. Keeping records (notes) and monitoring	√	√	√	-	√	-
6. Environmental conditions structuring	√	√	√	√	√	√
7. Reward (punishment)	√	√	√	-	-	√
8. Rehearsing and memorizing	√	√	√	-	√	√
9-11. Seeking social assistance	√	√	√	√	√	√
12-14. Reviewing notes and records taken during the class	√	√	√	√	√	√

How does the Use of Self-Regulated Learning Strategies Differ between High and Low Achieving Students?

The data on how the use of self-regulated strategies by the high-achieving and low-achieving students are presented under separate headings, as follows:

Goal-Setting and Planning

The participants were asked whether they made a study plan for math exams and what they did during the goal-setting and execution process to acquire knowledge and skills related to the exam topics. The situations and the questions presented to the participants in this regard were as follows:

"Your teacher set the date for an exam within the term. What would you do first?"

"Let's say, you will start studying for the last math exam of this term… You have a week and seven days until the exam… What would you do? What would you do first?"

Based on the responses about this strategy, it was found that one high (S1) and one low-achieving student (S4) went to a private education center to prepare for the high school entrance exam, and a study program was prepared by the private education center. Despite the existence of such a plan for both students, they said that neither of them followed this program. However, it was concluded that the high-achieving student (S1) had their own program involving daily plans, instead of following the study program made by the education center. S1 made the following statement about the program she made for her goals:

"For example, you are expected to have dinner between 8:00 and 8:30 at the education center and study between x and y hours without giving any break. I'm not doing like that. I have dinner when I feel like it and I take a break as much as I want."

S1 expressed that as soon as she learns about the exam date from the teacher, she creates a schedule in line with the dates of the other exams, both in her mind and in her planning notebook. She starts studying immediately, following this schedule. Besides, the student also goes over the topics and solves tests almost every day. Therefore, the student does not get worried about not being able to cover or finish the exam topics when the exam date is determined. The student just focuses more on studying for the exam. The other two high-achieving students who do not go to the education center (S2, S3) stated that they do not make a special preparation for the exams. They have a general study program and always solve a test for each subject daily. S3 said that he prepares a 100 problem test by tearing the tests out of books and stapling them together and he sets a goal to finish his tests in 2 hours after finishing daily homework. The student stated that he received help from his parents for the preparation of these tests and time monitoring. Thus, the student does not have many topics left to study until the exam and the student increases the number of math tests only during the last days before the exam. Below are the excerpts from S3's statements that prove his situation:

> S3: "Normally I solve 100 math problems (daily). My mother and I made the program. I finish them in 2 hours according to my plan. I used to solve 100 problems for each subject. I realized that I got bored. I was feeling like I wasn't going to finish them as the book had too many pages. Now we've extracted the 20-question tests from the book and stapled them separately. I solve 100 math problems for 5 subjects, I've realized now it is better for me."

The low-achieving student, S4, does not follow the program made by the education center, neither does he prepares a study plan. The student did not make a statement regarding his family's support for this process. The student stated that he could not follow the education center's program because he has difficulty in doing the homework given by the education center and school on time, so the only time the student is interested in studying is when he needs to take care of the homework and he does not do any daily review either. One of the findings observed in the interview is that the student, who does not do any periodic review, seemed to use the phrases such as "doing a test" and "solving problems", which obviously result from the exam system and private education centers. S4

stated that he gets worried and anxiety when teacher announces the exam date. To the following questions:

R: *What do you do for your math exam anxiety?*

S4: *I solve math problems and I save the ones I can't solve.*

R: *Do you start studying immediately?*

S4: *No, I don't start studying right away because I've got other exams, too. So I start a week later.*

The other low-achieving students S5 and S6 do not prepare a study program, either. It was determined that neither of the students set a goal during the study process and they do not have a regular (daily) study plan either. The statements of S5 and S6 regarding the aforementioned questions are as follows:

S5: *I don't set a goal, but I do now and then… For example, I think maybe I'll finish rational numbers. Sometimes, guests come over or sometimes we visit them.*

R: *Did you make a plan while studying for the exam from which you got 45 in this term?*

S5: *No, I did not.*

R: Do you set goals while studying for the math exams? Do you have a general study plan?

S6: *I don't make plans. When I go home, I have some snacks and I have some rest. I watch TV, then we have dinner around 7 pm. I do some reviews for the lessons for an hour. Then, I watch TV a bit and go to bed.*

Based on the statements of S4, S5, and S6, these students' studying styles differed from those of S1, S2, and S3. While the high-achieving students talk about reaching their goals within a study program, the low-achieving students appear not to have a planned study process.

In the light of these statements, the high-achieving students, who are good at using the "goal-setting and planning" strategy as determined by Zimmerman and Pons (1986), can create a study plan by setting their own goals. They can monitor themselves in this regard. Compared to the low-achieving students, they study in a more systematic and planned manner.

Rehearsing and Memorizing

The high-achieving students review the lectures and solve tests almost every day apart from their preparation for the exams. It has been found that the students divide the topics into days while preparing for the exams, so they spend less time studying for the topic explanations. They focus more on solving tests since they usually review the topics every three-four days. The students also stated that they memorize math formulas by writing them down, reading them over and over again, and solving more problems on the topic. A statement from S2 is presented as follows:

S2: *I've divided the topics in my sourcebook into weeks. There are a certain number of math problems to be solved for each topic every week. I study until I reach the number that I set for a topic. That is, I study regularly learning the topics and in addition I prepare for the exams. I just read my notes in my notebook the last two days before the exam and, I solve more math problems. It is not something different. That's my usual way of studying.*

The low-achieving student S4 stated that since there are also other subjects that he has to study for, he studies by dividing the topics into days, and he tries to solve the problems that he has not been

able to solve before and he goes over the topics when he fails to solve these problems. Stating that he does not review periodically, he repeated the phrase "doing a test" in reference to his exam preparation. During the interviews about reviewing and memorizing, the following dialogue took place between the researcher and the low-achieving student S6:

R: *Suppose a friend of yours told you that "I studied for the math exam yesterday" ... What do you think she/he did? What does "I studied for math" mean for you?*

S6: *I write down the explanations from the textbook in my notebook, and memorize. The teacher tells us the parts that can be asked in the exam and I study them. I study for about an hour, I go over my notebooks for 15 minutes for each subject every evening...*

Examining S6's statements, the student uses several strategies such as reviewing and memorizing, though, not effectively. Similarly, S5 also memorizes the parts that the teacher emphasizes. As for reviewing the lectures, the student stated that she resolves the problems in her notebook.

Thus, the findings of the study have revealed that all the high-achieving students use this self-regulated learning strategy and two of the low-achieving students also use it, but not effectively. One low-achieving student stated that he never used this strategy.

Seeking Information

The students were asked how they reached the knowledge for studying exams. According to their responses, the high-achieving students consider their notebooks as the primary source to understand their teacher's question style. In addition to their notebooks, they stated that they also rely on books that include "good-quality questions" and they use sourcebooks supplied from the training center or some other places. In addition, one of the high-achievement students, S3, stated that he watches video lessons on some websites about the topics he has not understood in addition to his notebooks and sourcebooks. Similarly, the low-achieving students review their notebooks and test books as a primary source to reach information. One of the low-achieving students, S5, gave the following statements about this strategy:

S5: *I got a test book. Sometimes I bring it to the class, but I usually review my notes for the exams since we write down the things the teacher says. However, I check out the book, too.*

Based on the statement by S5, the student uses her notebook and test book as a primary source to reach information. However, considering the fact that the student checks out the book "sometimes", it can be noted that the student does not effectively use the self-regulated strategy of selecting suitable sources in seeking information.

In conclusion, all the high and low achieving students use the "seeking sources for information" strategy; however, high-achieving students use this strategy more effectively.

Regulating and Organizing Information

The participants were asked about the self-regulation strategy of regulating and organizing information. They were occasionally asked supporting questions such as parallel form questions. From the point of expression of low-achieving students, it was observed that they were not able to evaluate what they knew, what they were required to know, and how they could organize what they had learned. Almost all of the students answered as 'I try to solve the questions that I do not understand'.

When the students were asked what they had done to organize what they knew and did not know, while preparing for an upcoming exam, S4 answered: *"I write down the questions that I don't understand about that a particular topic, and I try to solve them at weekends."* When the student was

asked about how he proceeds when he thinks that he ran into something of importance, and answered that he did not take any notes. It seemed that the student was not sure about what he really knew and what he had to improve. Therefore, the student could not organize what he knew and what he needed to learn. It was observed that S4 constantly talked about the questions he could not solve and how he planned to solve them later on. Similarly, S5 and S6 said that 'I would solve the questions on my notebook and sourcebook.

It was determined from the answers of the high-achieving students that they actually pay attention to this strategy during their studies. These students first determine their topics of emphasis, and then take a look at their notes. They also emphasized that the notes are essential for them since the questions are prepared by their teachers. While the study, they develop questions similar to what their teachers may ask on the exam and turn to other resources to find answers to them. They also take notes which remind them of the definitions used. Furthermore, they summarize the entire topic in all lessons and just create a shorter version of their notes in an attempt to make sense of the topic in all those notes. A statement from S1 is written as follows:

> "I first collect all the topics together where I can visualize them…Then, I determine the topics that I might run into in the test. For example, ratio and proportion. I note down important information about the topic. I go ahead and add some similar questions as well as additional info. I basically write down tricks that will help me solve questions about that particular topic."

To the question "Do you follow a specific method to get ready for your math exam?", the low-achieving students answered "no"; while the high-achieving students indicated that they first revise the topics, see if they have anything missing or a mistake in their notebooks about the topic, and then practice by solving questions about the topic, later on. High-achieving students expressed that this strategy does not only apply to math, but also to all the other courses they take. They added that this strategy helped them understand better and take better notes.

Keeping Notes/Records and Monitoring

Due to its nature, math includes many formulas and statements that students may not always understand. How students retain math formulas and the complex information they need to remember is considered among the self-regulated learning strategies. It was found that when the low-achieving students do not understand some terms or formulas they are supposed to remember; they usually revise them, review their notes, and not use any additional other methods. It is understood from the following statement of student S4 that he could not proceed with this strategy effectively:

S4: *"When I find something challenging, I go back and revise the topic all over again, and then I take another look at the question I couldn't solve".*

S4: *"I do not take notes, I just gather all the questions I could not solve and I deal with them on Saturdays."*

Some of the conflicting statements of low-achieving students on whether she/he can use the 'taking notes and reviewing' strategy include "I don't take notes, I just gather the questions I can't solve, and I try to solve them on Saturdays". Determining these questions in the first place could be considered as 'reviewing' in terms of going over the questions she/he fails to solve. However, they do not mention using techniques such as determining topics that require extra studying, noting, marking or highlighting the parts that they do not understand. Student S6 did not mention taking notes or keeping a record of information. S5 said that she took notes whenever she thought the teacher was telling something important.

S5: *"When the teacher starts talking about something, she tells us not to start taking notes, but my friend and I still take notes just in case she may ask about them in an exam."*

Although the statement indicates that S5 uses the note-taking strategy, she cannot conceptually express why she took these notes. The student simply justifies her need to take down notes by noting that the relevant information could be seen on an exam. Although the student uses the technique, it could not be stated as efficient.

It was understood that high-achieving students learn important information by writing them down on colorful papers or highlighting the information. High-achieving students S1 and S3 stated that they write down the definitions or formulas, which they could not learn right away, on small colored papers and stick them on the wall. Thus, they learn them since they keep them in sight all the time. Here are some examples of students' statements:

S1: "*I write down the summaries and notes on pieces of blue, green, pink paper, I write them especially bigger with colorful pens to make sure they are visible. I stick them to the places next to my bed, my desk, and everywhere.*"

S2: "*There is also another way that our teacher suggests, I write down the information that I need to remember, especially formulas, on colorful post-it-notes and hang them on my wardrobe. When I wake up or come home, I read them over and over again while I get dressed."*

S3 stated that he takes notes of the important parts of what the teacher says during the class, underlines them with a red pen, and also underlines the important parts in the books. Thereby, the student makes them more visible to learn easily. The following dialogue took place between the high-achieving student, S1, and the researcher, as the student explained another way of note-keeping that she only uses at the private education center:

S1: I have seen it from a friend of mine… It doesn't happen at school but the teacher at the education center makes us take notes... I take these notes in A4 papers, then copy them into my notebooks at home.

R: Why are you using such a technique?

S1: To review it one more time. Because I write them once, I learn by writing them down, polish my knowledge while copying them into my notebook, I go over them one more time and when I solve problems. This means I've already repeated them four times. So I understand them.

Reviewing the Class Notes and Records

The strategy of reviewing the notes and records taken during the class is the common strategy used by both groups of students. Both of the groups go over the notes that the teacher makes them take in their notebooks. It was concluded that students always go over their notes and books to remember the information and review the sample questions. Some excerpts are presented below on reviewing notes.

S3: *While studying for the exams, I first check out the notes taken during the class, especially the parts with explanations, then, I go on to solving problems. I read the class notes until I understand.*

S5: *While studying, I check out the things that the teacher asked us to write in our notebooks because the exam questions are prepared by our teacher. I study from my notebook and answer the questions.*

Structuring Environmental Conditions

Students' arrangement of their study environment is also one of the strategies determined by Zimmerman and Pons (1986). This strategy can be considered as a commonly used strategy. All the students have a room and study desk. However, one of the low-achieving students, S4, shares his room with his other two siblings, while the high-achieving student, S1, is the only child at home since her

elder sisters are studying in another province. Despite having a large study space at home, S1 expressed that she still does not study at a desk and she prefers to study by lying on the carpet, instead. The high-achieving student, S3, stated that he studies next to his mother in the living room while his younger brother is sleeping. The student studies in her/his room when his brother wakes up. S3 stated that he needs his desk to be tidy and he can only study in a quiet environment. Some of the statements of the student are presented below:

> S3: On my desk… I put all my sourcebooks in the furthest right corner. Next to them, I put my reading books and pencils. First I do the tests in my extras, after finishing and checking them, I read my storybooks. I also need silence. TV in our house is turned on only at night, not during the day, so there is no noise at home. I've never been interested in music; I can't study while listening to music."

The low-achieving students S5 and S6 prefer studying at a tidy desk. Both high-achieving and low-achieving students stated that they would not feel comfortable while studying in a noisy environment or the presence of music.

Seeking Assistance from Social Circle

It has been concluded that all the participants always get help when they have difficulty in understanding some topic or solving a problem. All of them first check out their notes for the exam questions or topics they have difficulty in understanding. If they still struggle, they consult the closest family member as the final solution. This family member is the elder sister or brother for both group of students. For example, the high-achieving student, S1, consults the topics she has difficulty with by calling her elder sister or taking a remedial class at the private education center and asking her/his teachers directly. S2 stated that he runs after the teachers, asking them these questions until he understands. On the other hand, S3 said that he first reads the problems that he cannot solve or the topics that he cannot understand over and over again, then watches videos online and tries to solve the problems again. If he still does not understand after these attempts, he gets help from his father:

> S3: I read from the beginning till the end, for example, from page 50 to page 80, I read those 30 pages. It doesn't matter whether it is long or short. I solve problems afterwards. Then, I watch videos online. If I still don't understand, my father is a teacher and I ask him. But I'm already good at math and I usually understand. There are a few things that I don't understand.

The use of this strategy is similar for the low-achieving students. One of the low-achieving students, S4, receives support from his circle by attending remedial classes at the private education center or receives help from his elder sister about the problems he cannot solve. S5 stated that she consults to her elder sister in the 8th grade, who is studying for the high school entrance exam while S6 consults her sister in high school about the topics and math problems he was not able to understand. Low-achieving students did not express getting any assistance from their parents.

Reward/ Punishment

Another strategy that can be used to differentiate between the high- and low-achieving groups of students was found to be the reward and punishment strategy. As for this strategy, one of the high-achieving students, S1, stated that he rewards herself with fun activities, watching TV and taking a rest. After finishing with her homework and studying, she watches TV and meets her friends at weekends. The low-achieving students do not seem to reward themselves when they achieve their goals or punish themselves when they fail to show the performance since they do not study within a plan or program. S1 stated that she would study more for the following exam when she received a poor grade. However, when she was asked about the meaning of "studying more", it was understood that the student does not try to do anything to punish herself.

Self-Evaluation

The self-evaluation process was the common strategy for all the participants. Although differences in their studying styles of the high- and low-achieving students, they assess themselves according to their right answers on the tests depending on the exam system. It was concluded that performing self-evaluation means marking the right answers in the test. Therefore, they gave similar responses to the interview questions about this strategy.

S3: *For example, having 4 mistakes out of 20 in a test means a lot for me because 4 out of 20 means 1 in 5. I check out where I did wrong, then I go over those topics.*

S2: *If I have a few mistakes, it means I'm successful.*

S5: *To succeed in the math exam, I need to solve problems and teacher's questions by myself. I should be solving the problems the teacher asked us. If I study more for the lessons and solve more math problems, it means I'm good at math.*

S6: *If my answer to the problem is correct, it means I've understood the topic.*

CONCLUSION AND DISCUSSION

There are several factors affecting success. The methods that high-achieving students use to study for their courses is a matter of curiosity for most people. In the same token, the methods that low-achieving students fail to use while studying and factors that impede their success are a piece of critical knowledge for mathematics education. From this point of view, the study aimed to examine the use of the self-regulated learning strategies by high-achieving and low-achieving students as grouped based on their GPAs and math grades. This research concluded that the students considered within the high-achievers category used almost all the strategies while the low-achieving students used only some of the strategies. In addition, it was found that the high-achieving students used the self-regulated learning strategies effectively for the preparation of math exams while the low-achieving students did not use these strategies efficiently. Thus, it can be concluded that the low-achieving student's ability to use self-regulation strategies is low.

The findings of this research confirm previous studies that examined the relationship between self-regulated learning strategies, motivation, cognitive skills, and academic success, and found that the students who have low academic success do not use self-regulated strategies effectively (Kaya, 2019; Özçakir Sümen & Çalışıcı, 2017; Pintrich, 2000, 2004; Schunk, 2005; Zimmerman & Schunk, 2001). In the light of these studies, it can be concluded that one of the reasons for students' low academic achievement is their lack of use of the self-regulated learning strategies. Based on this conclusion, it can be suggested that positive interventions can be designed to increase the use of self-regulation strategies and to overcome the shortcomings in low-achieving students' study methods (Zimmerman & Martinez-Pons, 1988). Self-regulation strategies and various educational activities regarding their use should be included in the curriculum and teachers should include these activities in the classroom to promote student achievement. According to Kistner et al. (2010), teachers should try to teach or improve these strategies directly or indirectly by performing them in teaching activities, continuously telling students what they should do directly, or creating suitable learning environments. It can be suggested that teachers can be more mindful of teaching self-regulation skills especially to the low-achieving students (Veenman, 2005).

Pape and Wang (2003) suggested that self-regulated learning strategies used by primary school students with high and low academic success vary. High-achieving students display more strategical behaviors and do not use strategies different from the ones the low-achievement students use (Pape & Wang, 2003). This study concluded that high-achieving students use more self-regulated learning skills and they perform them effectively during their preparation for the math exams. The strategies frequently used by high-achieving students are self-evaluation, organizing and associating

knowledge with other information, goal-setting, and planning, seeking information, and reviewing and memorizing. These strategies seem to contribute to success in math exams. Pape and Wang (2003) have stated that during the problem-solving process, high-achieving students frequently use strategies such as seeking sources for information, seeking social assistance, goal-setting and planning, organizing information. Students' awareness about strategies they use for math enables them to decide what they should do and not do in order to become successful. Thus, students make some inferences about what they have done in the exam, where they have achieved success and which self-regulation behaviors they should perform more effectively to attain a much better performance in future exams. Since high-achieving students know what they know and what they should learn within their metacognitive skills, they set goals for themselves, plan the required strategies, find suitable learning materials by identifying the topics they have not understood, and ask for help when needed. Therefore, the high-achieving students have self-control during the exam preparation process and they monitor, evaluate and adjust their learning performance (Bland, 2005).

The results of this study show that low-achieving students do not use most of the strategies. However, they use self-evaluation, environmental structuring, asking for assistance from social environment, and reviewing the notes taken during class. It can be suggested that the students cannot tackle the problems on their own and need assistance from their social environment. They can perform self-evaluation through the correct test answers due to the examination system. It has been concluded that low-achieving students do not use the primary and main self-regulation strategies such as preparing a study plan, goal-setting, organizing information, which are specifically emphasized for high achievement in the exams.

According to the results of the study, the following suggestions can be made: Considering that one reason for low academic achievement is students' lack of strategy use, learning programs should be developed for students to improve their self-regulation skills and use these strategies effectively. In addition, classroom environments where the activities for their self-regulation skills are carried out should be created. Low-achieving and high-achieving students in the same classroom environment can be included in collaborative group works. Thereby, these strategies can be taught through peer learning or at least students can be encouraged to use them. In the research, the results were obtained through the students' academic status (high-achieving and low-achieving students) and their strategies. In future studies, examinations analysis regarding the use of strategy and other variables can be carried out by observing the students' academic success with high and low self-regulated learning skills, in terms of different factors.

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International Journal of Progressive Education, Volume 18 Number 4, 2022

Examination of Individual and Environmental Factors Affecting Reading Comprehension with Structural Equation Model

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Abstract

This study aims to examine the individual and environmental factors affecting the reading comprehension level through the structural equation model. To test the research questions, the relational scanning model, one of the quantitative research methods, was adopted. The research was conducted in Ankara in the 2019-2020 and 2020-2021 academic years. The research group consists of 365 fourth-grade students and their parents. Reading comprehension scale, prosodic reading scale, reading attitude scale, reading motivation scale, vocabulary knowledge scale, meaningless word list (short-term memory) pre-knowledge test, and family effectiveness scale in creating reading culture were used in data collection. In the analysis of the data, the AMOS program was applied to create the structural equation model. According to the findings obtained from the structural equation model, all variables in the model are significant predictors of students' reading comprehension scores. Individual factors have higher predictive power than environmental factors. Among the individual elements, the variable with the highest predictive power was determined as "prior knowledge," and then "vocabulary", "Family participation in reading" was the variable with the highest predictive power among environmental factors. It is observed that the family income level significantly predicts reading comprehension. Among the environmental factors, the variable with the lowest predictive power is "parental education level". As a result, a model has been obtained that will help educators in the applications to be made, in which the factors affecting reading comprehension can be classified according to a specific structure and level of influence.

Keywords: Reading Comprehension, Structural Equation Model, Individual Factors, Environmental Factors

DOI: 10.29329/ijpe.2022.459.17

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INTRODUCTION

The learning experience begins with the ability to hear before birth and continues throughout life with various learnings. Hearing skill, which constitutes the first stage of language development, starts from the mother's womb. The baby, who gradually learns to distinguish sounds from the moment he arrives in the world, realizes that his wishes are met through sounds and begins to use the language skills in his environment actively. As a result, while some of the language learning occurs spontaneously in its natural environment, some of it is transferred to the individual on purpose. Among these learnings, "reading" is an acquired, complex process that is not naturally developed like most skills (Gooden, Carreker, Thornhill, & Joshi, 2007). Learning to read begins with the academic life for most individuals and can be assumed the first and basic skill from an educational perspective. Despite the dizzying pace of developments in today's world such as artificial intelligence, journey to Mars, and nanotechnology, the act of reading still maintains its feature of being the most basic and effective tool in acquiring information (Coşkun, 2002). Its characterization as a basic skill stems from the fact that reading is one of the most critical factors that predict the student's academic success (Basar, 2001). Like other ways of obtaining information, the reading skill changes shape by going through various stages throughout the individual's life. For instance, in the early periods when reading-writing studies were taught, the emphasis was on vocalizing the written symbols. Still, later, it was replaced by the effort to understand the text being read (Basaran, 2013a).

When the definitions related to reading are examined, it is seen that the concept of "comprehension" is generally agreed upon (Demirel, 1999; Akyol, 2008; Günes, 2009). Nevertheless, these definitions are primarily limited in explaining the concept of comprehension (Akyol, 2005). However, the relationship between reading and comprehension is in mutual interaction. In other words, an individual needs to be able to understand to read and to be able to read to understand (Demirel, 2011). Consequently, it is essential to examine the term "reading comprehension," which refers to these two concepts together. In the thread model, one of the definitions that deal with the concepts of reading and comprehension together, Scarborough (2001) defines the act of reading comprehension as a whole consisting of parts in itself, like many threads woven together. Pearson (2009), on the other hand, describes the concept of reading comprehension as a complex structure in which many factors interact. Reading comprehension is the individual's first interaction with the written material, then comprehending and structuring the meaning by combining his/her own pre-knowledge with the information in the text (Snow, 2002; Durkin, 1993). Duke and Carlisle (2001) describe the development of reading comprehension in two different stages. In the first of these stages, the aim is to acquire skills by acquiring alphabet knowledge. This stage does not show continuous improvement, it is also a stage that is learned in a certain period of time and has limits. Therefore, most of the individuals who receive reading education complete this stage. The main part that distinguishes reading comprehension from reading is the second stage, and this stage has no limits. It is infinite in line with the individual's capacity and desire. At this stage, the individual obtains and structures new information from each text he reads by using the alphabet knowledge he has obtained in the first stage.

The attention of problems with reading comprehension in our country can be associated with PISA results in particular. As a result of the practices carried out at regular intervals, it has been concluded that our country's students' reading comprehension levels are insufficient. The Progress in International Reading Literacy Study (PIRLS), on the other hand, found that Turkish students ranked 28th (average = 451 points) among 35 countries (average = 531 points) as a result of the study conducted with fourth-grade primary school students (PIRLS Report, 2001). The Turkish language has a letter and good harmony, and its writing is considered a transparent language. Accordingly, Turkish-speaking children's reading and spelling skills develop faster than English-speaking children's skills (Durgunoglu and Oney, 1997). Nevertheless, although there are no great difficulties in acquiring reading skills, the low performance of students when it comes to reading comprehension skills pushes many researchers to think and study this subject. As a matter of fact, according to Güleryüz's (1999) research, although the rate of reading comprehension at primary school level is 70% in developed countries, this rate is 40% in Turkey.

Ülper (2010) classifies the variables that affect reading comprehension in 3 groups.

1. Cognitive factors: Having knowledge about text structure (knowing story schemas), recognizing sounds, words, mastering sentence structures, prior knowledge, cultural knowledge, world knowledge.

2. Affective factors: Motivation of the reader to read the text.

3. Textual factors: The readability and semantic consistency of the text.

Gunning (2003) examined the factors affecting reading comprehension on three different bases.

1. Factors arising from the reader: Prior knowledge, basic language proficiency, analysis skills, high-level language skills, interest, motivation, purpose.

2. Factors originating from the text: Content, words, font and size, text type

3. Factors arising from the environment: collaborative environment, competitive environment, group, whole class.

Tompkins (2006) divided the factors affecting reading comprehension into two as reader and text-based factors.

1. Reader-based factors: prior knowledge, vocabulary, fluency, comprehension strategies, comprehension skills, motivation

2. Text based factors: Text type, text structure, text characteristics (literary quality, layout)

Özbay (2009), on the other hand, groups the factors affecting reading comprehension as individual and environmental factors.

1. Individual factors: Gender, language development, intelligence level, hearing, mental maturity, mobility adequacy.

2. Environmental factors: Teacher, family, circle of friends, school environment, library access, number of books.

Reading comprehension is a process that involves many sub-skills and takes place with the appropriate level of acquisition and use of each of these skills. Insufficient acquisition of these skills affects the reading comprehension level of the individual adversely. Although the reading comprehension skill is a process that can only be followed by measuring the performance of the student, the sub-skills that contribute to the development of this skill are fed by the teacher, the family, or the individual capacity of the child. Consequently, to solve the problem of "inability to understand what you read", first of all, the factors affecting the reading comprehension should be determined in detail, put in order of importance, and studies should be carried out to solve it by collaborating with the relevant components (family-school-student). Regarding the factors affecting reading comprehension, there are studies examining fluent reading (Baştuğ, 2012; Çayır, 2014), for example, the mother effect (Cengiz, 2010) or the use of metacognitive reading strategies (Bedir, 2018; Özdemir, 2017; Uysal, 2018), motivation (Yıldız, 2010; Çeliktürk Sezgin, 2015) or family effect (Altınkaynak, 2014) are also available in terms of factors in the literature. However, as in the examples around the world (Kim, Cho, & Park, 2018; Alonzo, Yeomans-Maldonado, Murphy, & Bevens, 2016; Cheng, & Wu, 2017).

However, a comprehensive study was not found in the literature review that reveals this structure and relationship in Turkey. Data showing which subcomponent is related to each other to

what extent or how they affect each other is limited or incoherent. This structure which consists of many components, the aim should be to determine which factor affects comprehension and to what extent. As a result, the present study aims to examine to what extent individual (vocabulary, prior knowledge, verbal working memory, prosodic reading, reading motivation, reading attitude) and environmental factors affect primary school fourth-grade students' reading comprehension levels and the relationship of these factors with each other through the Structural Equation Model.

Students' inability to understand what they read has been the subject of discussion by educators globally (Allington, 2002). In Turkey, just like all around the world, the importance of reading is especially emphasized in the primary education program, and there are efforts to solve the problem. However, it is also clearly seen in international exams that Turkish students' reading comprehension levels are insufficient. When it is examined in the context of the literature, it brings to mind whether the factors originating from students and families are related to reading comprehension, if there is a relationship, to what extent which variable is influential. To find the answers to these questions, addressing the factors as a whole and revealing the relationship between them will contribute to the studies to increase the level of reading comprehension in Turkey. There are several perspectives about the question "What are the components of reading comprehension?" However, regardless of the classification, it is crucial to determine the factors behind this failure for the education system to reach its goals. With the model introduced in the present study, it will be tried to determine which factors affecting reading comprehension are influential at what level. Students' reading comprehension skills are defined with all their elements in this context, and a kind of reading comprehension profiles are revealed. Just as the source of the disease is determined primarily through tests when visiting a doctor with a complaint, it will be possible to see which factor or factors cause the problem of not understanding what is read, which is the most critical factor on the academic failure of students, with the current study. Therefore, a contribution will be made to researchers who will develop a solution for the current problem in the future.

METHOD

Since this study aims to determine variables directly or indirectly affecting primary school fourth-grade students' reading comprehension levels, the research is descriptive and was designed in a relational survey model. While it is aimed to examine a situation that existed in the past or present as it is with the survey model, it is possible to describe the same situation comprehensively, comparatively, and correlational in the relational survey model (Karasar, 2002). Since the research center aims to determine the relationships between the variables, a Structural Equation Model was created to test the causal relationships. With structural equation modeling, which is a second-generation data analysis technique, it is possible to see many dependent and independent variables simultaneously and the relationship between these variables and to deal with a complex research problem comprehensively in a single process compared to simple statistical techniques (Anderson & Gerbing, 1988).

Purposeful sampling method was applied to determine the sample. In this method, the researcher determines his/her sample by choosing from the population in line with his/her purpose. For the data obtained in the study to be suitable for generalization and to reflect the general student population in Turkey, it has been paid attention to include different groups in terms of socio-economic and socio-cultural aspects. One of the proposed structural equation model variables is the relationship between family effect and reading comprehension, and it is included in the research in detail. The research group consists of fourth-grade students in two public and three private schools in Ankara and their families. In the study, in collecting data from fourth-grade students, it was assumed that students at this level had fluent reading skills, and their reading comprehension level started to increase. They could use several strategies (Veenman, Hout Wolters, & Afflerbach, 2006).

The demographic characteristics of the students participating in the application are given in Table 1.

Table 1. Demographic Characteristics of the Students Included in the Application

Variable	Categories	N	%
Gender	Female	189	51.8
	Male	176	48.2
	Total	365	100
School	State	309	84.7
	Private	56	15.3
	Total	365	100.0

According to Table 1, 51.8% of the students participating in the study are girls (189) and 48.2% are boys (176). When the type of school the students attend is examined, it is understood that 84.7% of them participate in public school (309) and 15.3% of them participate in private school (56).

Table 2. Demographic Characteristics of Parents Included in the Study

Variable	Categories	N	%
Financial status	Bottom	89	24.4
	Medium	162	44.4
	Top	114	31.2
	Total	365	100
Mother's Level of Education	Elementary School	36	9.9
	Secondary School	106	29.0
	High School	169	46.3
	Undergraduate	54	14.8
	Total	365	100
Father's Level of Education	Elementary School	8	2.2
	Secondary School	50	13.7
	High School	215	58.9
	Undergraduate	92	25.2
	Total	365	100

According to Table 2, 365 parents of students participated in the study. When the students' economic status was examined, there were 24.4% lower, 44.4% middle, and 31.2% upper economic. When the mother's education level was examined, it was determined that the least common group was those with primary school education with 9.9%, and the most common education level was high school education with 46.3%. When the father's education level was examined, the least encountered group was the primary school education level with 2.2%. The most common education level was the high school education level with 58.9%.

Table 3. Schools Where Data Was Collected From

School Name	School Type	N	%
A Primary School	State	267	73.15
B Primary School	State	42	11.5
A College	Private	25	6,843
B College	Private	16	4.38
C College	Private	15	4.10

When the type of school attended by the students in the study is examined, it is observed that there are two public and three private schools. 84.6% of the students go to state schools and 16.4% go to private schools. This rate is parallel to the private schooling rate across the country.

During the research process, data were collected through 9 different scales. Information about the scales is as follows:

Prosodic Reading Scale: It was developed by Bastug and Keskin (2013). The scale consists of 15 items, and the highest score obtained from the scale is 60. Students who get half of the total score are considered prosodically sufficient. Confirmatory factor analysis and reliability analysis were performed before the application.

Meaningless Word List: The abbreviated version of the list of meaningless word repetitions created by Akcakaya, Dogan, Gurkan, and Yucel (2018) was applied to determine the verbal working memory. The 36 non-words created for Turkish were rearranged as 1-4 syllables and limited to 20 non-words. The list was recorded in a professional environment and voiced by a professional announcer. As a result of the applications, the inter-observer reliability was determined as ,87.

Attitude scale towards reading: The "attitude scale towards reading" developed by Basaran and Ates (2009) was applied to determine students' attitudes towards reading. The scale is a Likert-type triple rating scale and consists of "disagree," "undecided," and "agree" options. Confirmatory factor analysis and reliability analysis were performed before the application.

Reading Motivation Scale: The reading motivation scale developed by Wigfield and Guthrie (1995) and adapted into Turkish by Yildiz (2010) was used in the study. The scale is a 20-item scale consisting of two dimensions, internal (interest, curiosity) and extrinsic (social, competition, recognition, adaptation), and six factors. Confirmatory factor analysis and reliability analysis were performed before the application.

Vocabulary Scale: The Vocabulary Knowledge Scale developed by Weshe and Paribaht (1993) and adapted into Turkish by Ates and Sis (2016) was used as a data collection tool. In the scale consisting of five items, a ranking is made for the related words from unknown to known, and the word is asked to be expressed both linguistically and semantically. A validity and reliability study was conducted before the application.

Text-Based Pre-Knowledge Test: Within the scope of the study, a Text-Based Pre-Knowledge Test (TBPKT) was developed to reveal the relationship between students' reading comprehension levels and their "preliminary knowledge" level. For this purpose, first of all, a reading comprehension test was determined. The reading comprehension scale developed by Kaya, Dogan, and Yildirim (2018) is based on. Among the six informative and narrative texts in the scale, the information and concepts thought to communicate the text effectively were identified and listed. Later, the researcher turned these concepts into questions, and a preliminary knowledge test draft consisting of 42 items was created. The reliability of the scale is .80.

Reading Comprehension Scale: Kaya, Dogan, and Yildirim (2018) studied with 348 students from different socio-economic levels in central districts of Denizli, attending the fourth grade of three other primary schools, and as a result of the analysis, the KR20 reliability coefficient for the whole test was ,83.

*The Influence of the Family in Creating a Reading Culture: The scale of "*Effect of the Family in Creating Reading Culture" was developed (Cigdemir, Akyol, 2020) to determine the effect of the family on reading comprehension. As a result of the exploratory and confirmatory factor analyses, a scale with 19 items and four factors with a reliability rate of.86 was obtained.

Before starting the data collection process, the parents of the students to whom the scales will be applied were informed about them through classroom teachers. In addition, the necessary permissions for the schools where the research will be carried out were obtained from the Provincial Directorate of National Education. One week before going to the school where the research will be conducted, the number of current 4th-grade students was obtained from the school administration, and

the list of the class to be studied in the school was taken, and the class te3acher was informed. The data collection process was completed by repeating the following items in each class where the applications would be made.

In the classroom where the application will be held, an informative speech was made with the participation of their classroom teachers.

Before starting the application of the scales, the "Family's Participation in Reading Scale" to be collected from the parents was distributed to the students, and they were asked to fill it out and submit it to the researcher within three days.

The Attitude Scale towards Reading and the Reading Motivation Scale, which can be applied collectively, were administered to the students on the same day.

The applications of the "Text-Based Vocabulary Scale," "Text-Based Preliminary Knowledge Test," and "Reading Comprehension Scale" were carried out in a way that they spread over a day each.

To apply the "Reading Prozodia Scale," the class list was followed up, and one-on-one work was done with the relevant student. In selecting the text to be read, the narrative text named "Aras' Meeting with Ozdemir Asaf" has been determined since it contains the feelings and thoughts to reflect the prosody.

In the last step of the study, the "Meaningless Word List" scale was applied to measure the students' working memory. Each student worked one-on-one in a private and quiet environment.

The implementation of each class was completed in an average period of one week. The above steps were repeated for each class. Although there were changes in the period depending on the class size, the data collection process took approximately 11 weeks, excluding official holidays.

FINDINGS

In this section, the answer to the question of "What is the predictive power of the variables in reading comprehension in the structural equation model, what is the direction and level of the relationship between the variables," which is the problem sentence of the research, was sought. Structural equation models (SEM) are more effective than the path analysis method as it is possible to detect and control errors in measurement (Meyers, Gamst, & Guarino, 2006). In this research, examining the model assumptions for SEM analysis, testing the model, and evaluating the fit will be conducted.

The purpose of examining the assumptions is to determine whether the data are suitable for SEM analysis. Assumption analyzes include missing values, normality, sample size, and multicollinearity analyzes (Cokluk, Sekercioglu, & Buyukozturk, 2014).

Lost data were analyzed first, and missing or incorrect data were identified and removed to test the assumptions. Extreme value analysis was conducted to determine the normality of the distribution of the data set. According to the Z score, those in the range of +3, -3 were accepted, and the answers of 4 participants outside of these values were excluded from the data set. As a result, normality analyzes were made with 365 data and presented in Table 4.

Table 4. SEM Normality Analysis

Variable	N	Min.	Max.	Skewnes	Kurtosis	Sd
Preliminary Information	365	0.00	1	-.52	.11	.19
Vocabulary	365	1.52	4.40	.31	-.64	.61
Working Memory	365	1.75	3.00	-.64	.30	.22
Motivation	365	1.81	4.00	-.53	.22	.38
Attitude	365	1.38	3.00	-.51	-.96	.36
Prosody	365	1.13	3.73	-.65	-25	.47
Reading Comprehension	365	.20	1.18	-.09	-.83	.21
Family Participation	365	1.74	4.47	0.14	.05	.46
Effectiveness of the Teacher	365	3.18	3.82	-.34	1.16	.20

It is necessary to examine the skewness and kurtosis coefficients in the table to determine whether the structural equation model consisting of different variables shows a normal distribution (Karagoz, 2017). The fact that the multivariate kurtosis value is between -2 and +2 and that the multivariate critical ratio value is less than 1.96 indicates that the data set has multivariate normality (Bayram, 2010). According to the multivariate normality analysis of the model, it was determined that the data set met the multivariate normality assumptions.

In SEM analysis, the formula "50 + eight times the number of predictor variables" is applied for the appropriate sample size (Tabachnick and Fidell 2015). Nine predictor variables were used in the model. As a result, it is observed that the number of 365 participants is a suitable sample size for SEM. For multicollinearity, the relationships between the variables were examined and the relationship between the variables was less than .80. Therefore, it is observed that there is no multi-linearity problem in the data set.

After the model assumptions were realized, the stage of testing the model was started. The structural equation model created is included in Figure 1.

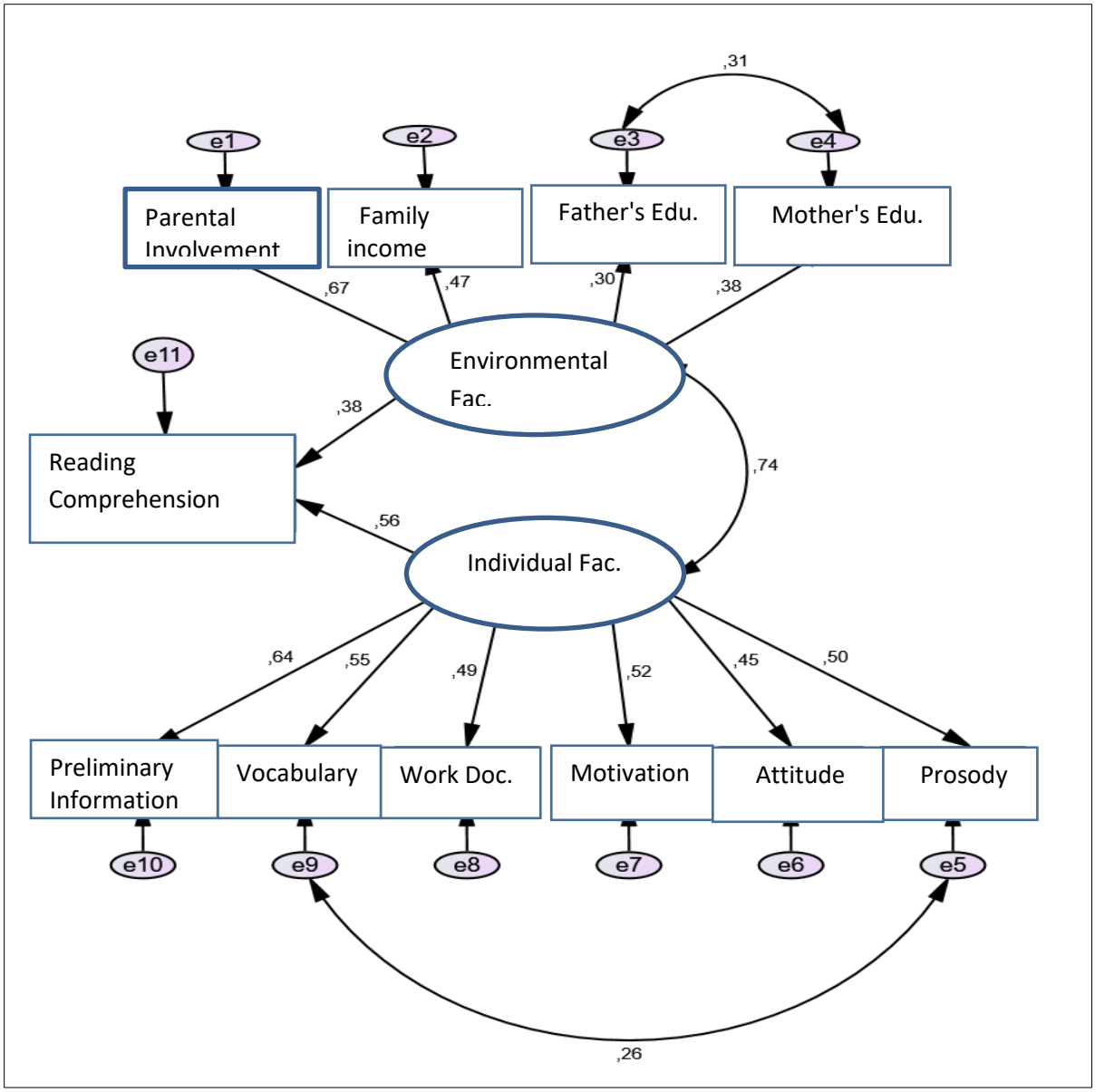

Figure 1. Structural Equation Model Results

After testing the model, the fit values were evaluated. Fit indexes according to the created model are included in Table 6.

Table 6. The Structural Model Fit Values

	X^2/sd	RMSEA	CFI	IFI	GFI
The Structural Model	2.33	.06	.94	.94	.95

When Table 6 was examined, it was determined that the chi-square fit index of the model (χ2= 93,302, P= .00, df= 40 , χ2 df= 2,33) was significant. Other fit indices was found as RMSEA= .06; GFI = .95; IFI= .94 ; CFI = .94. It is seen that the fit values of the model are at a very good level.

In Figure 1, there are path coefficients, standardized factor load values, and standardized error values for the structural equation model established. Information about the ratio of these values and the effect size is shown in Table 7. Kline (2016) made the classification of "small effect" for values below 10-, 30, "medium effect" for values between 30-, 50, and "large effect" for values above 50 for the standard path coefficients. Analyzes are examined in this context.

Table 7. The Effect of Individual and Environmental Factors on Reading Comprehension According to SEM

Structural Relations	Standardized Path Coefficient	Effect Size
Individual factors → Reading Comprehension	,56*	Great Effect
Environmental factors → Reading Comprehension	,38*	Medium Effect

*= p< 0,05

According to the information obtained from Table 7, there is a direct, positive, and significant relationship between individual factors and reading comprehension level (β= 0.56; p <, 05) in the structural equation model created. In addition, the effect of individual factors on reading comprehension is at a high level. According to the table, there is a positive, medium-sized, and significant relationship between environmental factors and reading comprehension levels (β= 0.38; p<.05). Individual and environmental factors, two latent variables in the model, also have a significant and robust relationship (β= 0.74 ; p <05).

In Table 8, the ratio in which the variables included in the individual factors predict the factor is shown.

Table 8. Predicting the Reading Comprehension of Individual Factors by Variables According to SEM

Relationship of Variables with Individual Factors	Standardized Path Coefficient	Effect Size
Attitude	,44*	Medium Effect
Motivation	,51*	Great Effect
Working Memory	,48*	Medium Effect
Prosody	,50*	Great Effect
Preliminary Information	,64*	Great Effect
Vocabulary	,54*	Great Effect

*= p<0,05

According to the information obtained in Table 8, there is a positive, moderate and significant relationship between students' attitude towards reading and individual factors (β=44, p < .05) in the structural equation model created. According to the model, there is a positive, high-impact, and significant relationship between students' reading motivation and individual factors (β=.51, p <05). The verbal working memory of the student is positively, moderately, and significantly related to individual factors (β= .48, p < .05). There was a positive, high-impact, and significant relationship between reading prosody and individual factors (β 50 ; p < .05). The level of preliminary information that the student has about the text read is positively and highly correlated with the individual factor (β= 0.64 ; p > .05). The relationship between the vocabulary information in the text read and the individual factors in reading comprehension (β= .54 ; p < .05).

The effect rates of the variables included in the environmental factors are shown in Table 9.

Table 9. Predicting Levels of Variables in Reading Comprehension of Environmental Factors According to SEM

Structural Relations	Standardized Path Coefficient	Effect Size
Father's Education Level→ Environmental Factor	,29*	Minor Effect
Mother's Level of Education → Environmental Factor	,37*	Medium Effect
Family Involvement in Reading →Environmental Factor	,67*	Great Effect
Family's Level of Income→ Environmental Factor	,47*	Medium Effect

*= p>0,05

According to the information obtained from the table, in the structural equation model, the education level of the father (β= 0.29 , p < .05) predicts the environmental factor positively, with a small effect and significantly, and the education level of the mother (β= .37 , p< .05) positively, moderately and significantly. According to the model, the environmental factor (β= .67 , p < .05) predicts the family's activities to create a reading culture with the student positively, highly effective, and significantly. The income level of the family (β= .47, p < .05) predicts the environmental factor positively, moderately, and significantly.

DISCUSSION, CONCLUSION, AND SUGGESTIONS

It was concluded that the factors included in the structural equation model, which was created to reveal the individual and environmental factors affecting the reading comprehension of primary school 4th-grade students, fit the model very well. In the structural equation model created, firstly, the predictive level of latent variables (individual factors, environmental factors) in reading comprehension was examined. According to the findings, it was determined that individual factors (β=, 56; p <0) and environmental factors (β=, 38; p 0) significantly predicted reading comprehension. The two main latent variables in the SEM model, individual and environmental factors, were significantly and highly correlated with each other (β=, 74; p <0). Similarly, some studies examine the concept of reading in our country by presenting a structural equation model. Kurnaz (2018) discovered that the variables of vocabulary, preliminary information, and intrinsic motivation predicted reading comprehension directly and positively due to his research. In another study, Yamac and Celikturk (2018) found that individual factors such as reading motivation, reading anxiety, and reading fluency directly and strongly predict reading comprehension. Cetinkaya, Yıldırım, Ates (2017), as a result of the study they conducted to examine the effects of speaking and reading prosody on reading comprehension skills, they concluded that reading prosody is highly correlated with reading comprehension level. Baştuğ and Akyol (2012) determined that prosody is an important predictor of reading comprehension as a result of the study they carried out to determine the predictive power of reading fluency in reading comprehension.

Studies that reveal a structural equation model related to the concept of reading comprehension have been frequently encountered abroad in recent years. For instance, Alonzo (2016) found that vocabulary and working memory variables are potent predictors of reading comprehension. Muijselaar et al. (2017) observed that fluent reading, vocabulary, and working memory are meaningful predictors of reading comprehension due to the model they created to explain the relationship between reading comprehension and reading strategies. In the structural equation model developed by Korean high school students to reveal their English reading skills, Kim (2015) found that using reading strategies and listening skills were the best predictors of reading comprehension, but reading motivation and reading success had a weak relationship with reading comprehension. In this respect, the findings contradict with the results obtained. Tobing (2013), as a result of his research to examine the relationship between reading strategies and reading comprehension self-efficacy, concluded that reading self-efficacy is a strong predictor of reading comprehension. It has been determined that the level of using reading strategies has a strong relationship with reading comprehension, but it is not a good predictor.

As a result, it is also supported by the literature that variables such as vocabulary, prosody, motivation, attitude, working memory, which are classified as individual factors affecting the concept of reading comprehension in the current study, are strong predictors of reading comprehension.

When the model is analyzed, it is seen that the strongest predictor of reading comprehension among individual factors is the level of prior knowledge. It is followed by the vocabulary score the student has. Family participation in reading was the variable with the highest predictive value among environmental factors. Parental education level, on the other hand, has a relatively lower predictive power than other variables. Similarly, Zelzele (2017) determined that prior knowledge could explain approximately 30% of the reading comprehension level due to the study conducted to examine the

effect of primary school fourth-grade students' pre-knowledge levels on their reading comprehension levels. This finding seems to support the high predictive effect obtained in the present study. Basaran (2013) found that fluent reading is an indicator of reading comprehension, and prosody is more predictive than other fluent reading skills in making meaning in-depth due to his research conducted to reveal the relationship between fluent reading situations and reading comprehension levels. Miller and Schwanenflugel (2008) concluded that prosodic reading is the most critical variable of fluent reading. The essential factor in developing reading skills is prosody due to their application to examine the effect of oral reading prosody on reading skill. In studies conducted to determine the predictor of reading motivation on reading comprehension, results supporting the present finding were obtained (Yildiz, 2013). In their study to analyze the phonological memory performance of children with reading difficulties and children with typical development, Kesikci and Amado (2005) discovered a significant difference in phonological memory between the two groups and that children with reading difficulties had lower phonological memory scores. Alloway and Alloway (2010) found high correlations of 0.31 between working memory and first literacy skills and 0.41 between working memory and mathematics skills. Their study examined the relationship between literacy skills and mathematics skills of 5 6-year-old children. Another striking aspect of the study is that working memory is more effective on learning than IQ. As a result, it is understood that the findings for all variables collected under the name of individual factors are supported by domestic and foreign literature.

Some studies support the significant predictor of family participation in the reading process, another of the results obtained from the present study, on the student's reading comprehension level. For instance, Katranci (2015) found that having a library of her own at home positively affects the motivation of reading books and that the motivation to read books explains 9% of Turkish course academic success. Matvichuck (2015), on the other hand, discovered that family behaviors have a high effect on the child's interest in reading. In another study, Molfese, Modglin, and Molfese (2003) concluded that the environment created for reading at home is effective on reading skills, which is much higher in the pre-school period. In the developed model, it is seen that the findings obtained regarding the effect of environmental factors on reading comprehension are supported by both domestic and foreign literature. The results obtained from the structural equation model created can be briefly explained as follows.

The variables of preliminary information level, vocabulary, reading prosody, working memory, attitude towards reading, and reading motivation, which constitute the individual factors of the study, are meaningful predictors of reading comprehension.

The environmental factors of the study are the mother's education level, father's education level, and the economic status of the family are significant predictors of understanding the variables.

Environmental and individual factors affecting reading comprehension are not independent of each other and are strongly related.

In the light of the findings, it is seen that variables such as vocabulary, prosody, motivation, attitude, and working memory are strong predictors of reading comprehension. Consequently, conducting studies on these variables to increase the students' reading comprehension level will have effective results. For instance, supposing that a teacher plans to develop activities for understanding the classroom environment based on the developed model. In that case, he/she should first focus on the preliminary information factor, which is the strongest predictor. Thus, activities should be organized to increase the level of preliminary information about the text to be read Following can be shown among the activities to be recommended; preliminary research on the text to be read, animations containing the concepts in the text before the text is read, increasing the level of curiosity with movies or stories, and having in-class discussions and speeches on the subject before starting to read etc. Again, instead of completing the texts in the Turkish course books with classical methods by first reading and then answering the questions, the thematic approach should be exhibited under the structure of the Turkish Education Program, and it should be ensured that the student knows which subject he will be in

contact with during the theme. Therefore, the student will have the opportunity to encounter the necessary preliminary information during the theme.

Since vocabulary is the second strongest variable predicting reading comprehension among individual factors, it is necessary to focus on vocabulary in activities for comprehension. For this purpose, it is recommended that teachers concentrate on making word boards, keeping a word book, solving puzzles, using a dictionary, and guessing the meaning to increase their vocabulary level. Considering both the effect on the reading comprehension level and the skills that must be acquired throughout life, it is seen that the level of vocabulary is directly proportional to the life success of the student. However, unlike other variables, the development of vocabulary skills begins much earlier than the school age. At this point, the responsibility is on the families rather than the school and the teacher. It is essential to raise awareness of families and ensure that children meet with books from an early age, make sample readings, and confront different reading materials. Since the awareness of parents will be provided by schools and teachers, it is among the suggestions to focus on training and provide the necessary materials free of charge by the state.

However, these studies can be carried out under the control of a central executive (MEB - MNE) and on a platform where responsibility is shared, rather than activities that neither the family nor the school can organize. For instance, to increase the child's vocabulary level, the environment offered from birth should be kept under control, and the necessary support should be given to families.

It is seen that economic level has a positive relationship with reading comprehension. Applications such as access to resources, free courses, additional courses for needs in the context of the social state should be continued as in recent years and increasingly to eliminate this negative situation and offer equal opportunities in education to students from different economic levels.

It will be effective to examine the validity and differentiation status of the model created at the fourth grade level of primary school by adding or subtracting different variables appropriate to the situation and applying them to student groups at the pre-school, primary school, second, or high school level.

While creating the model, sensitivity has been tried to reach student groups at different socio-economic levels, but working with higher sample numbers in other geographical and cultural parts of our country and determining the differences that will arise will effectively find solutions.

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International Journal of Progressive Education, Volume 18 Number 4, 2022

Investigating the Effect of Concept Teaching Strategy on Academic Success

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Abstract

This study examined the effect of concept teaching on students' learning level of concepts through concept teaching strategy; hence, a quasi-experimental design with pretest–posttest measurements and experimental and control groups was employed. An achievement test was created by the researcher to determine the experimental and control groups; this test was administered to 129 students studying in Grade 3, and the KR20 reliability coefficient was found to be .846. The pretest data were analyzed by independent groups' t-test. As a result of the analysis, two groups that were identical to each other were randomly assigned as experimental and control groups. While the concepts such as governor, district governor, mayor, and headman, which are the concepts determined from the life science curriculum, were taught to the experimental group with the help of concept teaching strategy, a program-based teaching was conducted for the control group. After 5 weeks of application, a posttest was administered to the experimental and control groups. As a result of the dependent group t-test, a significant increase in the posttest scores of the experimental and control groups was observed. As a result of the independent groups' t-test, a significant difference was noticed in favor of the posttest scores of the experimental group.

Keywords: Concept Teaching Strategy, Concept Development, Life Science, Primary Education, Early Childhood.

DOI: 10.29329/ijpe.2022.459.18

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INTRODUCTION

People's understanding of the world is related to their understanding of concepts. Concepts are perceived as the basis of human thinking and have an important place in the process of understanding the world and structuring what an individual has learned in this process. Concepts are the basic elements for developing one's knowledge and forming the basis for subsequent learning (Novak, 1971); moreover, they are related to language. Therefore, it is believed that they were invented by human beings. Concepts have emerged with the human desire to understand the world and express their understandings about it. Therefore, concepts cannot be considered independently of humans (Merrill, Tennyson, & Posey, 1992). From the moment people come into the world, they encounter many things, ideas, and events. Concepts allow us to distinguish these structures from each other and establish relationships between them (Klausmeier & Harris, 1966).

Concepts are abstract and generalized forms of objects and phenomena that can be expressed in language and are categorized objects, events, and sets of ideas (Eggen & Kauchak, 1999). They are grouped on the basis of similar ideas, events, processes, and objects (Senemoğlu, 2003). They have descriptive characteristics or attributes, which separate their examples from examples of other concepts. It is regular information that enables a person to distinguish or associate one or a group of objects from others (Prater, 1993). Concepts, principles, and rules guide us to solve new problems that arise in situations we have never encountered before (Nisbett, Fong, Lehman, & Cheng, 1987).

One of the requirements for understanding concepts is classifying information. Concepts are a network of inferences and consequences that emerge by categorizing phenomena, events, ideas, and objects (Prater, 1993; Ribovich, 1979). They are mental tools. With these mental tools, individuals can think about the world they live in, understand the world and the environment, and communicate. Understanding concepts makes it easier to understand much more complex information, principles, and phenomena. At the same time, it provides a relationship among events, ideas, and various information (Senemoğlu, 2003). According to Ausubel (1968), meaningful learning occur when a learner associates newly learned concepts with old concepts and place them in subsets (Novak, 1971). Different aspects of a concept can be thought of as different levels within a category system. In other words, to understand a concept well, it is necessary to know the different concepts in the categories within the concept and their relations with each other.

Childhood is the fastest period during which concept formation occurs because many concepts encountered in childhood are new, and the world becomes meaningful if these concepts are cognitively regular. (Ribovich, 1979). There are three aspects of concept formation, namely, the term describing the description of phenomena or events, the features or attributes that define them, and the concept. Concept formation occurs if there is a good harmony among these three aspects (Gerring, 1999). In the concept formation process, the individual performs three processes: generalization, distinction, and definition. In the generalization process, concepts are grouped according to their common features. In the process of distinction, differences of assets with common characteristics are determined. In the definition process, a proposition that defines the concept is reached from the similar and different characteristics of these entities (Senemoğlu, 2003; Ülgen, 2004). According to Ülgen (2004), concept learning is the job of creating and structuring information in the mind by categorizing stimuli into certain categories. According to Martorella (1974), if teachers or educational programers want to facilitate concept learning, they should pay attention to the three following situations. First, every feature that is not related to the concept should be eliminated. If features that are not related to the attribute of the concept are added, it is thought that this factor may attract the attention of the student in a different direction. Second, the features of giving examples are related to the concept. After providing an explanation that thoroughly explains the concept, examples that are not explanations of comprehension should also be given. This factor enables the learner to clearly observe the similarities and differences. The third situation is to be able to create various images; as a consequence, inferences can be drawn about partnerships, and generalizations can be made about the concept.

Although concepts start with observation and experience from the birth of the child, school is one of the most important steps of concept learning (Markle, 1975). Success in different fields such as mathematics, science, and life science is associated with learning concepts from preschool to university (Martorella, 1974). While children come to school having learned many concepts, they come with a very few concepts on the scientific concepts' front. When children come to school, their cognitive structure is not systematic wherein they can explain their environment mentally. Only when their environment is configured properly, they can understand concepts and principles, perceive cause–effect relationships, or solve problems (Novak, 1971). For this reason, concept teaching is one of the basic and most important subjects in primary school as in every education step. In particular, while teaching a new subject, teachers try to teach students general concepts related to it (Ribovich, 1979). Klenner-Moore (2004) stated that children need the support of an adult, especially in learning abstract concepts. In this process, adults can make it easier for students to learn concepts by structuring the learning process.

One of the most important effects in making the concepts meaningful and organized is systematically learning the concepts. There are two basic approaches in concept teaching: deductive and inductive. In the deductive approach, the name and definition of the concept are provided. Thus, the basic elements of the concept are shaped in a student's mind. Thereafter, the distinctive features of the concept, examples of the concept, and non-examples of the concept are given (Erden & Akman, 1997; Gürdal, Şahin, & Çağlar 2001).

In the inductive approach, examples of the concept are set out. First of all, by giving examples or examples that best describe the concept, it is ensured that students build arguments for common features of the concept. In the next step, non-exemplary examples of the concept are given. While giving non-exemplary examples, it is necessary to give examples of concepts that have common features with the concept but are not included in the class in which the concept is included. This process continues until the students clarify the name, definition, and features of the concept (Erden & Akman, 1997; Gürdal, Şahin, & Çağlar, 2001).

Michaelis and Garcia Concept Teaching Strategy

One of the tools used in the systematic teaching of concepts is concept teaching strategies. When the literature is examined, we find many concept teaching strategies. Although concept teaching strategies differ in terms of functioning, concepts are addressed in the teaching process either with a deductive or inductive perspective. Another key point is that students know the meaning of the concept and the defining characteristics and descriptions of the concept at the end of the activity.

Based on concept learning approaches, there are many strategies, methods, and models that can be applied while introducing students to concepts. In this study, Michaelis and Garcia's concept teaching strategy was used to teach concepts. This strategy composed of five stages. When these stages are examined, it is observed that they contain the characteristics of various concept strategies. Hence, it is very rich in terms of number of activities in the process of teaching the concept (Dündar, 2007). The five stages are given below:

Defining: In this step, the activities in the subheadings of behavioral and functional definitions such as showing, showing using examples, using synonyms and antonyms, and using dictionaries are employed to create definitions of concepts for students.

Distinguishing example and non-examples: After the concept is explained, examples of the concept are given; further, examples that are similar to the concept but are not direct examples are given. In this way, students' confusion about the concept is prevented by highlighting the differences between the concepts.

Listing, grouping, and naming: Examples of a concept are classified, generalized, and named.

Problem-solving or research: After giving general information about the concept, the steps of the problem-solving method are applied by creating a problem related to the concept or addressing an existing problem. Another activity that can be performed at this step for students is to research questions about the concept.

Providing types of learning activities: This stage starts with exercises that students concretely perform and are accompanied by students' symbolizing information on the subject.

Purpose and importance of the study

In this study, the concept teaching strategy of Michealis and Garcia was used as a basic method in the concept teaching process in life science lessons. Life science is a lesson wherein students formally and informally learn concepts that they frequently encounter in daily life. When the content of the life science course is examined, students relate some concepts to their daily lives such as family, home, and school, and their readiness is high; while there are concepts such as the republic, voting, freedom, and democracy that directly affect students' daily lives, but their readiness is low because they are not aware of this effect. It is important for students to be able to learn such concepts by examining them in various dimensions, in order to realize the impact of their democratic rights on their daily lives. In addition, the study is important in terms of making students realize who they can get support from in the problems they encounter in their local environment, as well as realizing how they have an impact on the functioning of their local environment with the votes they cast. In addition, these concepts are also important in terms of preparing the infrastructure for many citizenship skills in the life science course. For this purpose, to ensure that these concepts are as permanent as possible, it is important to plan activities systematically. In this study, it is aimed that students learn the concepts of governor, district governor, mayor, headman and examine local government units from different perspectives by using the Michaelis and Garcia Concept Teaching strategy. This study aimed to determine whether this strategy makes a meaningful difference in the learning process by trying to gain concepts through rich activities using the concept teaching strategy. In addition, the answers to the following research questions (RQs) are sought:

RQ1: Is there a significant difference between the pretest and posttest scores of the experimental group learning the concept with concept teaching strategy?

RQ2: Is there a significant difference between the pretest and posttest scores of the control group learning the concept with a program-based teaching strategy?

RQ3: Is there a significant difference between the posttest scores of the experimental group learning the concept with concept teaching strategy and the control group learning the concept with program-based teaching strategy?

METHOD

Research Design

A quasi-experimental design with the experimental and control groups was employed in the study. In studies arranged according to a quasi-experimental design, the effect of the independent variable is determined by applying it to the experimental group (Ekiz, 2015). In this study, two groups that were identical to each other were determined by applying a pretest and were randomly assigned as experimental and control groups. While the concept teaching strategy was employed for the experimental group during the concept teaching process, the control group continued the program-based education process. After the learning process of the concepts was completed, a posttest was administered to the experimental and control groups, and the effectiveness of the concept teaching strategy was determined.

Research Group

Since the outcome that is the subject of the study is included in the third grade life studies course "life in our country", the third grade students who will form the study group first were chosen. To decide the sample group, a school was selected using a random cluster sampling method. Cluster sampling is a common unit that contains many units in which there are many elements (Christensen, Johnson, & Turner, 2015). As a result of the pretest administered to the Grade 3, two classes that were equivalent to each other were randomly assigned as experimental and control groups. In all, 43 Grade 3 students (experimental group = 23 and control group = 20) constitute the study group of the research.

Academic Achievement Test

In the study, the academic achievement test developed by the researcher was used to measure the academic success of the experimental and control groups before and after the procedure. While preparing the academic achievement test, the life science curriculum (2018), the life science textbook (2018), and Turkish Language Association (2019) dictionary were used. Considering that some test items could be eliminated during the pre-application process, at least three question items were written to measure each concept. The academic achievement test consisted of 21 questions with 3 options in Stage 1. To obtain expert opinions about the academic achievement test, two academicians and four classroom teachers were consulted. After the opinions were received, additions and deletions were made in the test, and the 17-item 3-option academic achievement test was finalized.

The pre-application of the academic achievement test was administered to 129 students, and all the data were included in the study. To determine the reliability of the test applied to 129 students, the KR20 reliability coefficient formula was applied, and the reliability of the test was determined as .838 in Stage 1.

The difficulty and distinguishing indexes of the items that make up the test were determined. Item distinguishing index is the measure of an item to distinguish students who know or do not know the question. Items with an item distinguishing index of .40 and above are considered very good items, items between .30 and .39 are considered good items, items with .20 and .29 should be corrected items, items with less than .19 are considered weak items. When the distinguishing indexes of the items in the achievement test were examined, it was determined that only the distinguishing index of Item 8 was below .19, and it was excluded from the test. After its exclusion from the test, the KR20 reliability coefficient was determined to be .846. A KR20 reliability coefficient of over .70 is generally considered sufficient for the reliability of the test (Büyüköztürk, 2011). The distinguishing indexes of the remaining items are between .32 and .73. The item difficulty index gives an idea about whether the item is difficult or easy. In the literature, items with an item difficulty index of .29 and below are considered difficult, items with .30–.49 have medium difficulty, and items between .50–.69 and .70–1 are considered as easy. What matters at this point is the average difficulty of the test. Ideally, the average difficulty of the test is close to .50 (Tekin, 2010). In this study, the average item difficulty index of the academic achievement test was determined as .59. In this sense, it can be said that the test is of average difficulty.

Application Stages

While planning the study, the concepts subjected to the application were first determined. For this purpose, the life science curriculum and life science textbooks were examined. When life science programs and textbooks are examined, it is observed that many abstract and concrete concepts are the subject of life science lessons. For this reason, certain criteria have been tried to be included while determining the concepts. First, attention has been paid to the fact that the concepts chosen are the ones that students cannot learn informally. Concepts that do not directly affect the daily lives of students or that they do not use very often in their daily conversations, which are close to each other in terms of meaning and function, and might be confused by students are specifically selected. For this reason, concepts such as governor, district governor, mayor, and mukhtar in the unit "Life in Our Country" were determined as concepts to be taught. After the concepts were determined, activities

were organized in accordance with the stages of Michaelis and Garcia's concept teaching strategy. Sample activities for the governor concept are given below:

Stage 1: Defining: After informing that governor as a concept will be taught, the concept was explained. The students were asked to find the term governor from the dictionary and look up its meaning. Students were asked to share the definitions they find in a way that they do not repeat.

Behavioral definition: It is reminded that the governor is the most authorized person representing the state in a province. It is stated that this person is in charge of ensuring the safety of the society and providing services such as education and health services.

Functional description: Students were asked about what changes they want to make to their school and write a letter to the governor regarding this issue.

Showing: Photos of the governor of the city where the students live were shown. An average of one-minute videos was shown wherein the governor is in protocol, supervision, and office.

Using examples: At this stage, the concepts of governor–school principal and city–school were compared to each other, allowing students to learn about the basic duties of the governor as an administrator without going into much detail. The students were asked about the duties of the school principal. Based on the answers received, it was explained that the governor has a similar duty to maintain order in the city.

Synonyms and antonyms: Concepts such as governor–school principal, city–province, junior–senior, task–duty, and responsibility–liability are explained.

Using a dictionary: The words explained in the Synonyms and Antonyms Activity are examined again from different dictionaries, and the relationship between them is examined.

Stage 2: Distinguishing between examples and non-examples: After introducing the concept and definition of the governor, students were informed that each province has a governor; examples were given related to the governor of the province they live in, the governors of neighboring provinces, and the governors of the provinces they are familiar with, such as Ankara and Istanbul.

The non-example of the governor concept was specified as mayors in provincial centers. They were informed that the mayors were also the persons in charge of conducting some services in the city and were to be found in each city.

3- Listing, grouping, and naming: Students were given the names of six provinces and six districts from the city they live in. If these names were to be divided into two groups, they were asked how they could group them. After the students grouped them into provinces and districts, the question "Who is the most authorized person representing the state in the province?" was asked.

Stage 4: Problem-solving research: At this stage, a research assignment was given. Students were asked to research and report the first female governor of the country and her life story and present it to the classroom.

Stage 5: Providing types of learning activities: At this stage, students were expected to discuss and reflect on the subject by giving a case study. The case study was created on the authority of governors to give a snow holiday in severe winter conditions, which students were very interested in.

The following case is given: "…. Heavy snowfall is observed in the city center during the winter months. It snows very often in the high regions in the city center, and there are problems in transportation due to heavy snowfall. There may be problems in transportation to schools, particularly in rural areas. One of the most important problems is the access of students who go to school with bussed education in rural areas. The governor wants to give a snow holiday in case the students

encounter an unfavorable situation during the journey, but this situation causes disruption of the education and training, as most of the winter passes with heavy snow in the city center. Therefore, the governor has a dilemma between these two important issues. If you were a governor, what kind of solution would you provide for such a situation?" Based on the given case study, it is aimed that students use the problem-solving steps to determine their answers.

The activities for each concept lasted an average of 5 lesson hours, and the experimental process took 5 weeks in total. On completion of the experimental process, a posttest was administered to the experimental and control groups, and it was examined whether there was a significant difference in the knowledge levels of the experimental and control groups regarding the concepts.

RESULTS

To decide the test to be used to measure the equivalence of the experimental and control groups' knowledge levels, it was first determined if the data collected was normally distributed. The Shapiro–Wilks test was used to measure the normality of the data. Further, it was determined that the data of the experimental and control groups were normally distributed. While the p-value for the experimental group was .264, it was determined as .595 for the control group. After determining that the groups were distributed normally, independent groups' t-test was applied to determine the equivalence of the groups. Table 1 contains the independent groups' t-test results ($p > .05$).

Table 1 Experimental and Control Groups' Pretest t-Test Results

Groups	N	Average	Standard deviation	t	p
Experimental group pretest	23	8,87	4,003	-, 399	, 692
Control group pretest	20	9.35	3,870		

As a result of the analysis, it was determined that there was no significant difference between the pretest results of the experimental and control groups. In other words, it can be said that the knowledge levels of the groups about the subject before the experimental procedure are equal.

To determine whether there is a significant difference between the knowledge levels of the groups after the experimental process, it was analyzed with the posttest whether the data obtained were normally distributed. The normality of the data was tested with the Shapiro–Wilks test, and while the p-value for the experimental group was .105, the p-value for the control group was determined as .731. As the groups showed normal distribution, dependent and independent groups' t-test was applied for the analysis of the posttest results of the groups. The dependent groups' pretest and posttest t-test results of the experimental group are given below:

Table 2 Experimental Group's (Dependent Group) t-Test Results

Groups	N	Average	Standard deviation	t	p
Experimental group pretest	23	8,87	4,003	-, 10,349	, 000
Experimental group posttest	23	13,00	2,256		

When the experimental group's pretest–posttest dependent groups t-test results are compared, it is seen that there is a significant difference in favor of the experimental group's posttest results. The posttest scores of the experimental group increased in a way to create a significant difference. The dependent groups' pretest and posttest t-test results of the control group are given below:

Table 3 Control Group's (Dependent Group) t-Test Results

Groups	N	Average	Standard deviation	t	p
Control group pretest	20	9.35	3,870	-3,199	, 005

Control group posttest	20	10.05	3,620

When the dependent group t-test results of the control group are examined, it is seen that there is an increase in favor of the control group's posttest scores. As a result of the t-test, it was determined that there is a significant difference in favor of the posttest scores of the control group. To determine the effectiveness of the experimental process, an independent group t-test was conducted to see whether there is a significant difference between the posttest scores of the experimental and control groups. Independent groups t-test results are given below:

Table 4 Experiment and Control Groups' (Independent Groups) t-Test Results

Groups	N	Average	Standard deviation	t	p
Experimental group posttest	23	13,00	2,256	3,252	, 002
Control group posttest	20	10.05	3,620		

When the experimental and control groups' posttest results were compared, it was determined that there was a significant difference in favor of the experimental group. In other words, it was revealed in the posttest that the knowledge level of the experimental group about the concepts learned was better than the control group. Based on this result, it can be deduced that using concept teaching strategies while teaching concepts is more effective than curriculum-based learning.

DISCUSSION AND CONCLUSION

Good comprehension of concepts is vital for students to have a sense of information, develop relationships, and learn more complex subjects. Concepts are the basic building blocks of knowledge. Thus, learning and understanding many subjects depend on the correct understanding and learning of the concepts (Birbili, 2007; Piaget, 2004; Piaget, 2019; Taba & Elzey, 1964). The learning of the concepts can occur both formally and informally. However, systematic approaches may be needed in particular for learning scientific and abstract concepts (Bracken & Crawford, 2010; Vygotsky, 2020; Vygotsky, 2021a; Vygotsky, 2021b). This study thus aimed to teach some concepts in the life science course with the aid of the concept teaching strategy, which will be the basis for many topics that the students will learn in their educational lives.

In this study, the pretest and posttest academic achievement test scores of the experimental group were compared, and a significant difference was observed in favor of the posttest scores. The pretest and posttest academic achievement test scores of the control group were compared, and a significant difference was found in favor of the control group's posttest scores. In other words, the knowledge level of the experimental group, which learned the concepts with the concept teaching strategy, and the control group, which learned the concepts through program-based concepts, increased significantly. When the posttest academic achievement test scores of the experimental and control groups were compared, it was determined that there was a significant difference in favor of the experimental group's posttest scores. Thus, it can be deduced that concept teaching strategy is more effective in the teaching of concepts than program-based learning. When the literature is examined, it has been determined that different concept teaching models, techniques or strategies used are effective in the concept acquisition process. It is seen that different concept development models are used at different grade levels in teaching concepts related to different courses and subjects such as life science, social studies, history, mathematics, informatics and technology. It has been shown that the models used in the direction of the studies are successful in the concept development process (Anwar, et. al, 2019; Björklund & Pramling, 2013; Chen et al., 2016; Çolak, 2010; Dagiene & Srupriene, 2016; Dündar, 2007; Gunawan et al, 2019; Jokabi-Vessels et al., 2016; Kaddoura et al, 2016; Kurniawan & Mashuri, 2021; Liu & McKeough, 2004; Nukman, et al., 2018; Ogannaya et al, 2016; Sakiyo & Waziri, 2015; Saputro et al. 2019; Setyowati et. al, 2019; Sukardjo & Salam, 2020; Turan, 2011; Wicaksono et al., 2020). It is seen that many different concept development models in this study and in the discussion section of the study are effective in learning concepts for students at different levels.

Even if different models, methods and strategies are used in the studies, common points draw attention. In all models, the acquisition of concepts proceeds in a cascading and highly planned manner. During the concept development process, different features of the concept were emphasized. It was ensured that the students were actively involved in this process. For this reason, it can be said that systematizing the concept development process, albeit with different tools, makes concept learning process more effective.

Suggestions for Researchers and Practitioners

In this study, Grade 3 students were selected. However, there are many concepts that students learn in Grades 1and 2 through their life science programs. Therefore, a similar study can be conducted with these students.

There are many strategies in the literature for teaching concepts. By choosing different teaching strategies, studies can be conducted related to the learning level of the concepts; studies can also be conducted on the effectiveness of concept teaching using different strategies together.

In this study, concept teaching strategies were examined in the context of life science lessons. A similar study can be conducted at the primary school level for life science, science, or mathematics lessons, and its effect on academic achievements can be examined.

As the textbooks usually deal with the subject through a deductive approach, teachers prefer to deal with the subject through concept teaching. By using different concept teaching strategies, they can enable students to discover and provide diversity in activities. Teachers' level of knowledge about such strategies is also important in this case. Hence, studies can be conducted to determine teachers' knowledge or perspectives on concept teaching strategies.

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