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International e-Journal of Educational Studies (IEJES) is an international refereed (peer reviewed) journal. IEJES started its publication life in 2017. Published three times a year (March, July and October).

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From the Editor

Dear IEJES reader,

International e-journal of Educational Studies indexed in **EBSCO Education Full Text Database Coverage List H.W. Wilson Index** since January 7th, 2020. https://www.ebsco.com/m/ee/Marketing/titleLists/eft-coverage.pdf

IEJES has been indexed in the Education Source Ultimate database, which is the upper version of the Education Full Text (H.W. Wilson) and Education Full Text (H.W. Wilson) database, from 2020 to the present. https://www.ebsco.com/m/ee/Marketing/titleLists/esu-coverage.htm

I would like to welcome for Dr. Deniz KAYA the new member of our editorial board in 2023. I would also like to express my thanks for Dr. Claudia NICKOLSON who retired and left from University of North Carolina, US.

In the present issue, there are sixteen articles. All of these articles are research articles. Our authors present in this issue are composed of researchers working in different universities and institutions.

We look forward to seeing you in 2023 July Volume 7 Issue 15 of the International e-Journal of Educational Studies (IEJES). We are inviting you submission of manuscripts for the forthcoming issue.

Yours Sincerely

Prof.Dr. Tamer KUTLUCA

International e-Journal of Educational Studies (IEJES)

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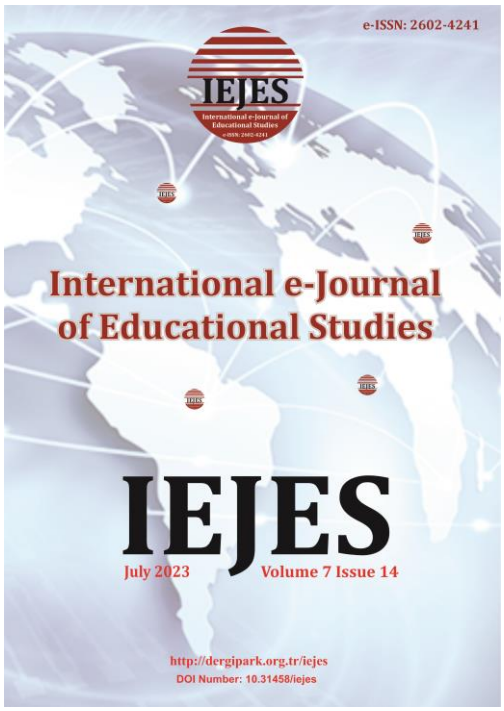

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Author Contribution Statement

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Abstract

Online learning has both positive and negative impacts. One of the positive impacts of online education is that students know about the use of information technology, in this case, online learning media. While one of the negative impacts is that students experience academic stress. This research aims to determine the level of academic stress during online learning for students at the Faculty of Economics and Business (FEB) Universitas Negeri Surabaya (Unesa). The study involves one independent variable, namely the quality of learning, and one dependent variable, namely academic stress. The sampling method is a simple random sample where the total number of respondents obtained was 329 people. The author uses regression analysis to determine the effect of learning quality on student academic stress. The analysis results show that the quality of learning is good, and the level of academic stress of FEB Unesa students is moderate.

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Research Article

The Analysis of Learning Quality on Student Academic Stress*

Dwi YULI-RAKHMAWATI [1] **Hapsari Shinta Citra PUSPITA-DEWI** [2] **Erta ERTA** [3]
Putri HESTININGRUM [4]

Abstract

Online learning has both positive and negative impacts. One of the positive impacts of online education is that students know about the use of information technology, in this case, online learning media. While one of the negative impacts is that students experience academic stress. This research aims to determine the level of academic stress during online learning for students at the Faculty of Economics and Business (FEB) Universitas Negeri Surabaya (Unesa). The study involves one independent variable, namely the quality of learning, and one dependent variable, namely academic stress. The sampling method is a simple random sample where the total number of respondents obtained was 329 people. The author uses regression analysis to determine the effect of learning quality on student academic stress. The analysis results show that the quality of learning is good, and the level of academic stress of FEB Unesa students is moderate.

Keywords: Academic stress, learning quality, regression analysis, student

1. INTRODUCTION

The development of science and the process of globalization brings demands that have an impact on all parties and levels of society. These changes also apply to the world of education, especially to students. Students are elements that are directly related to the changes and demands of the world of education. The needs that arise impact students in the form of pressure. Students need to be able to meet specific predetermined standards/criteria so that students can feel pressured because of their inability to meet these standards (Singh, 2014: 1752).

Learning can be done for fun and supports students' development. Currently, various supportive and fun learning methods are available for students without compromising the objectives to be achieved. A supportive environment, in this case, the school environment, family, and playmates, will impact children's development. The age of adolescence, especially late teens, have different characteristics from adults and children. They are in the transition from childhood and adulthood. Bakrie (2010) said that during this transitional period, adolescents experience a condition known as the "storm & stress" period. Changes in physical and developmental disorders characterized by increased hormone levels can lead to unstable conditions in dealing with problems. They are less experienced in solving problems, so it is easier to experience pressure/stress.

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Stress can be happen to everyone and anywhere, including students. It can encourage/ motivate to increase productivity at a specific stress level. However, if the stress that arises is excessive and we cannot control it, it will have mental and physical harmful consequences. Students experiencing stress/pressure can come from various sources, for example, academic problems related to the inability of students to complete academic demands, delaying completing assignments, low academic achievement, and health problems. Purwati (2010) said that monotonous situations, noise, homework, far-fetched expectations, ambiguity, lack of control, dangerous and critical situations, underappreciation, neglect, missed opportunities, confusing rules, conflicting requirements, and coursework deadlines can cause academic stress.

The learning environment can be one of the causes of teenagers experiencing stress. The college conditions include too much curriculum load, school orientation that focuses on grades, anxiety about exams, unattractive ways of teaching, giving punishments that do not educate, specific subjects that are a scourge, lack of facilities that support talent and skills. The interests of students, as well as their social environment can be the cause of the emergence of stress / pressure on students. Likewise with the school atmosphere, the way lecturers teach, the teaching materials that are considered difficult, and the workload can cause students to be depressed and experience stress. This is in line with the opinion of Aryani (2012: 3) who cites Ng Lai On's conclusion that if he (student) is not accepted in his social group, it is likely that students will experience stress. This means that the learning environment contributes to the problems at hand.

Kumari's statement (2012:152) cites Salami, noting that academic stress is a common problem faced by both boys and girls in school and how they cope with it can affect their learning outcomes. This opinion is also supported by Dawood (Hussain, Kumar & Husain, 2008: 70) who suggests that the stress experienced by students has an effect on their learning outcomes/achievements. Stress is also one of the most influential factors in learning achievement. Kaplan and Sadock (Emamanuei, Adom & Solomon, 2014: 88) stated that at a certain level stress can affect learning abilities. If in the learning process students are disturbed, the results obtained are certainly not as expected.

Learners with difficulty adjusting can be a separate stressor that will hinder the teaching and learning process so that it affects the learning process. In addition, the factors of expectations and goals, pressure or competition in peer groups and expectations from parents can be the cause of stress. Furthermore, Sumarni stated that the factors that can cause stress can be external or internal. External factors can be in the form of environmental support or barriers, socio-economic systems, facilities, natural conditions and so on. The factors originating from within/internal in the form of physical health conditions as well as psychological or emotional health conditions. Internal factors play an important role because internal factors determine the success of the learning process because the health of a student can change with environmental changes.

In addition, the character of adolescents who are different from other ages also has an impact in dealing with stress as explained by Aryani (2012: 6) quoting from Yiming and Fung, namely in the form of the inability of students to express their problems with others and also not being able to manage their stress positively. This is because so far, adults are the ones who solve the problem, they are not used to dealing with the problem independently. As a result, they experience obstacles, especially with regard to their learning achievement/outcomes at school. Based on open interviews with 15 students, some of them showed symptoms of difficulty in adjusting/adapting at the beginning of the semester. They revealed that it feels like they don't have time off and free, not long after feeling the time off suddenly feel that going to college is just around the corner. They also revealed that sometimes they feel so tired with lecture activities and activities outside of lectures. From the interview there was an opinion that they felt pressured by the demands that came from their family (parents) even though the demands for achievement or success were not expressed directly by their parents. Some of the respondents also said that problems outside of academic matters also interfered

with their academic affairs. The number of activities / other busyness also makes them disturbed in completing college assignments.

When asked further about how they organize and manage their time, a small proportion of respondents stated that they had no difficulty in dividing and balancing their time. Meanwhile, when asked about how they coped with the pressure they faced, more than half of the respondents said they had nothing specific to do. They tend to ignore this, some claim to share their problems with people/parties who are considered capable of solving and willing to listen to them. The consequences of academic pressure experienced by students can be positive or negative effects (Agola, & Ongori, 2009). An increase in the level of stress/academic pressure will decrease academic ability which affects the achievement index. Loads that are felt too heavy will trigger memory impairment, concentration, decreased ability to solve problems and academic ability (Goff, 2011). The positive impacts of stress include increasing creativity and triggering self-development as long as it is within the limits of individual abilities. Stress/pressure is needed for student self-development (Smeltzer, & Bare, 2008). The response given by each student/individual is different from one another. The response depends on personality, health conditions, previous experience, coping mechanisms, age, gender, amount of stressor and the ability to manage emotions of each individual (Potter & Perry, 2005). The urgency of this study is to determine the level of student academic stress and the quality of student learning. In addition to describing how the impact of online learning on learning motivation and academic stress levels during the covid-19 pandemic. This is useful to describe when online learning has advantages and disadvantages in the learning process in virtual classrooms.

1.1. Academic Stress

Lazarus and Folkman (1984) stress is a state or situation that is complicated and is judged as a state that suppresses and endangers the individual. Psychologists such as Baum, Coyne and Holroy (Sarafino, 2002), classify stress in three perspectives, namely stress as a stimulus, stress as a response and stress as a process. According to the perspective of stress as a stimulus, stress occurs due to the environment or events that can be threatening or dangerous, causing tension and feelings of discomfort. According to the view of stress as a response, stress is an individual's reaction/response to unpleasant events. Stress as a process occurs because of the interaction between the individual and the environment.

Academic stress is a student's response to pressing academic demands that lead to discomfort, tension, and behavioral changes (Desmita, 2010). According to Kaplan and Sadock (Affum-osei et al., 2014), stress is one of the most important factors affecting learning success. The academic stress experienced by students can affect their learning outcomes/performance. Lubis (2021) explained that the cause of stress among students during the COVID-19 pandemic was caused by academic stress and learning assignments. Factors that can trigger stress in students, namely: The number of tasks is considered excessive, requiring relatively quick study times, which can damage students' mental health, a different learning environment when doing distance learning, limited understanding of the material obtained by students is also very difficult. have an effect that causes stress, there is no clear schedule setting also makes students anxious and ultimately stressed.

Stress that cannot be controlled or overcome by students will affect their thoughts, feelings, physical reactions, and behavior. Cognitively, students have difficulty concentrating in learning, difficult to remember the material, difficult to understand the subject matter, negative thinking about themselves and their environment. Affectively the emergence of feelings of anxiety, sensitivity, sadness, anger, frustration. Physiologically, the reaction appears to be red, pale, weak and feeling unwell, heart palpitations, shaking, stomach pain, dizziness, body stiffness and cold sweats. In addition, the behavioral impacts that arise are damaging, avoiding, arguing, insulting, delaying the

completion of school assignments, being lazy at school, and being involved in excessive and risky seeking pleasure activities (Aryani, 2016).

1.2. Education Quality

In general, quality is the characteristics of goods or services that indicate their ability to satisfy anticipated or implied needs. In education, quality includes educational inputs, processes and outcomes (Ministry of National Education, 2001). Educational input is all that needs to be available, as it is necessary for the process to occur. Something that acts as a guide to the ongoing process in the form of resources and software and what to expect. Input resources include human resource recruitment, students and learning infrastructure.

According to Semiawan (Depdiknas, 2003), quality is concerned with assessing the degree to which a product meets a specific standard, standard or reference. In education, this statement can be made through both quantitatively measurable learning outcomes and qualitative observations in the school curriculum. The formulation of educational quality is dynamic and can be examined from different angles. Consensus on the concept of quality can often be traced to existing references or formulations of references such as B. Policies, teaching and learning processes, curricula, facilities and infrastructure, and educational staff agreed upon by stakeholders.

The quality of education must be targeted to make progress based on planned change. Improving the quality of education can be achieved through two strategies, namely improving the quality of education that is oriented toward broad skills education related to mind and body (skills), and improving the quality of education that is more academically oriented. It is not only determined by the university as an institution of learning, but also adapts over time to the changing views and expectations of society. Follow this trend. The public's evaluation of the quality of university graduates is constantly improving. In order to meet these challenges, universities need to continuously improve the quality of graduates in line with the development of social needs. According to Umaedi (2000), a process combined with the quality of human resources themselves can improved the education quality. Recognizing the importance of the process of improving the quality of human resources, the Government, together with the private sector, shares this task and continues to strive to develop higher quality education through various means, including by developing and improving curricula and assessment systems, improving educational facilities, developing and purchasing. Instructional materials and training for instructors and other educational personnel.

2. METHOD

2.1. Research Model

The research was conducted by examining a group of objects in the present to describe the object of research systematically, factually, and accurately regarding the facts and the relationship between the events (Singarimbun & Efendi, 1995). Quantitative places more emphasis on the relationship between nature and phenomena. Quantitative is more objective than qualitative because of quantitative testing in the conclusion section. Therefore, the results are usually based on statistical analysis. Therefore, this research method is quantitative. According to Mashuri and Zainuddin (2009) in Karwati (2014), Verificative research aims to verify the truth of a particular method that has been carried out elsewhere with or without improvements to overcome similar problems.

2.2. Participants

A research location is a place where researchers research particular objects. The researcher took the area in Surabaya, East Java province, precisely at the Universitas Negeri Surabaya. The focus of the research aims to provide limitations on the discussion and analysis. The research focuses on the influence of the quality of learning on the student's academic stress. The sample comes from students of the Faculty of Economics and Business who are active in the Odd semester 2020/2021.

2.3. Data Collection and Analysis

There are primary and secondary data used in this study. If further information is needed, the researcher will conduct interviews or observations in the field. At the same time, secondary data comes from documents, official records, scientific articles, and other supporting data. Data on the number of active students at FEB Unesa for the Odd semester 2020/2021 for each study program is secondary data obtained from the Academic Section. In this study, the primary data source is students as research objects who have attended online lectures. The focus of this research is to take a quantitative approach to Unesa students. Before performing a regression analysis, the research data must meet the necessary assumptions. The traditional assumptions of simple linear regression in Kurniawan (2008) are to ensure that the residuals are normal with an average of zero with a particular variance and the error variance is homogeneous (homoscedasticity).

3. FINDINGS

The respondents in this study were 329 respondents. The following is the profile of respondents based on gender and study program. The results obtained are as follows:

Table.1 Gender of respondents

Gender	Frequency (F)	Percentage (%)
Male	67	20.36
Female	262	79.64
Total	100	100.00

Based on the table above, most respondents are female (262 people or 79.64%), while male as many as 67 people or 20.36%.

Table 2. Respondent study program

Gender	Frequency (F)	Percentage (%)
Bachelor of Commerce Education	137	41.64
Bachelor of Economic Education	23	6.99
Bachelor of Accounting Education	73	22.19
Bachelor of Management	61	18.54
Bachelor of Office Administration Education	4	1.22
Bachelor of Sharia Economics	11	3.34
Bachelor of Economics	8	2.43
Bachelor of Digital Business	10	3.04
Bachelor of Accounting	2	0.61
Total	100	100.00

Based on the table above, the profile of respondents based on the study program was taken from 329 respondents. Most respondents took the undergraduate study program in business administration education, many as 137 people or 41.64%. In contrast, the smallest number of respondents took the accounting undergraduate study program, as many as two people or 0.61%. Validity indicates the accuracy of the data between what happened on the subject and what the researcher collected. To find the effectiveness of an item, researchers correlate item scores with the sum of those items. The default validity value is 0.3. If the resulting correlation number is greater than the default, then the statement is valid (significant) (Sugiyono, 2017: 125). It is valid if the coefficient between the items and the total items is equal to or above 0.3. Still, the item is declared invalid if the correlation value is below 0.3.

In finding the correlation value, the author used the Pearson product-moment formula. Based on the results of data processing, the results of the validity test on each variable are as follows:

Table 3. Academic stress validitas test

Item Number	R	Critical R	Remarks
P1-P35	≥ 0.448	0.300	Valid

Based on the results of the validity test on the academic stress variable, which consists of 35 statement items, each item has an R > critical value of 0.300. Thus, all the questions on the academic stress variable can be declared valid.

Table 4. Learning quality validity test

No Item	R	Critical R	Remarks
P1-P11	≥ 0.573	0.300	Valid

Based on the results of the validity test on the learning quality variable, which consists of 11 statement items, each item has an R > critical 0.300. Thus all questions on the learning quality variable can be declared valid.

The reliability test used in this study is one shot or one-time measurement. Then the results are compared with other statements or measure the correlation between the answers to the comments. Reliability was measured by the statistical test Cronbach's Alpha on SPSS. A construct or variable is reliable if it gives a Cronbach alpha value > 0.700. The following are the results of the reliability test on the three variables in this study, namely as follows:

Table 5. Reliability test

Variable	*Cronbach's Alpha*	Critical Value	Remarks
Learning Quality	0.962	0.700	Reliable
Academic Stress	0.898	0.700	Reliable

Based on the table above, all variables have a Cronbach alpha reliability coefficient value > 0.700, thus all variables in this study are reliable. A simple linear regression analysis is a functional or causal relationship between one independent variable and one dependent variable. Simple linear regression analysis tests the nature of the cause-and-effect relationship between the independent variable (X) and the dependent variable (Y). (Sugiyono, 2017:261). Simple linear regression analysis in this study aims to determine the effect of academic stress on learning quality. Based on the results of data processing, the results of multiple linear regression analysis are as follows:

Table 6. Simple linear regression analysis

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	**Std. Error**	**Beta**	**t**	**Sig.**
1	(Constant)	46.311	1.965		23.570	.000
	Academic Stress	-8.052	.019	-.154	-2.820	.005

a. Dependent Variable: Learning Quality

Based on the table above, the results of a simple linear regression equation as follows:

Y = 46,311+ (-8.052)+ e

From the results of the regression equation above, the interpretation is as follows:

a. The constant is 46,311, meaning that if the academic stress is 0 (zero) and there is no change, then the quality of learning will still be worth 46,311.

b. The academic stress regression coefficient is -8.052, which is negative, which means that if academic stress increases, the quality of learning will decrease by -8.052. Analysis of the coefficient of determination (R^2) is a tool to measure the quality of the assessment by looking at the percentage of the effect of all independent variables on the dependent variable (Ghozali, 2016: 95). Based on the results of data processing, the results of the coefficient of determination are as follows:

Table 7. Determination coefficient

Model Summary				
Model	**R**	**R Square**	**Adjusted R Square**	**Std. Error of the Estimate**
1	.651[a]	.424	.421	7.08580
a. Predictors: (Constant), Academic Stress				

Based on the table, the results of the coefficient of determination show that the R square value is 0.424 or 42.4%. This value indicates that 42.4% of the learning quality influences academic stress, while the remaining 57.6% contributes to the effect of other variables not examined in this study.

Hypothesis testing in this study uses partial hypothesis testing. According to Ghozali (2016), the test shows how far the influence of one explanatory variable individually explains the variation of the dependent variable. The purpose of the t-test is to determine the effect of academic stress on the quality of learning. Hypothesis 0 (H_0) to be tested is whether a parameter (β) is equal to zero or the alternative hypothesis (Ha) is that the parameter of a variable is not equal to zero. Based on the results of data processing, the results of hypothesis testing with a t-test were obtained as follows:

Table 8. Hypothesis testing

Coefficients						
		Unstandardized Coefficients		**Standardized Coefficients**		
Model		**B**	**Std. Error**	**Beta**	**t**	**Sig.**
1	(Constant)	46.311	1.965		23.570	.000
	Learning Quality	-8.052	.019	-.154	-2.820	.005
a. Dependent Variable: Academic Stress						

Based on the results of hypothesis testing, the p-value is 0.005 and less than 0.05; thus, rejecting Ho means that learning quality has a negative impact on academic stress.

4. DISCUSSION and CONCLUSION

This study shows that there is a relationship between the learning quality and academic stress. The learning quality give a negative impact on the academic stress. Current stress is something inherent in modern life, as stress has become a part of life, no matter where you are, school, work, family. Stress can affect anyone, including children, teens, adults, and the elderly. In a higher education setting, students are inextricably linked to stress, and many students experience it. This may be due to the many academic requirements that must be met, such as assignments, exams, etc. Most students who experienced academic stress in the intermediate category reported that they considered their studies to be demanding. Lecture requirements and exam difficulty were deemed excessive and it was realized that he did not meet the existing academic requirements. Various stressors in lectures during the Covid-19 pandemic, such as situations such as poor internet connection, many tasks to complete in a short period of time, quick response to instructions, need to adapt quickly to learning from home, and reduced interaction with other friends and staff, will bring pressure to the students. Ideally, the learning process is facilitated by a learning process done remotely. This transition is certainly not easy for students. Stress is both a result of transactions between individuals and a cause of stress, which requires an evaluation process. Also, a stressor is an event or situation that exceeds the brain or body's ability to handle the stressor. When the requirements are greater than the individual's ability, students will have pressure. On the other hand, if the individual's ability is greater than the requirement, the individual sees the requirement as a challenge, so the requirement does not cause the individual to become stressed. These academic demands were related to high academic expectations, demanding lectures, difficult exams, and perceptions of his inability to meet existing academic demands and lack of social interaction. Therefore, it can be said that various aspects of academic stress

generation in this study contributed to the stress experienced by students in their academic activities. Furthermore, the learning quality in the Faculty of Economics and Business is good and the academic stress is moderate. The condition shows that the student of the Faculty of Economics and Business have good stress management and coping which is required to minimize the stress associated with academic event. The fact that most students come from educational study programs supports the above conclusion because as prospective educators, students are expected to be able to handle stress well because it will relate to their prospective students later when they become teachers to create conducive learning.

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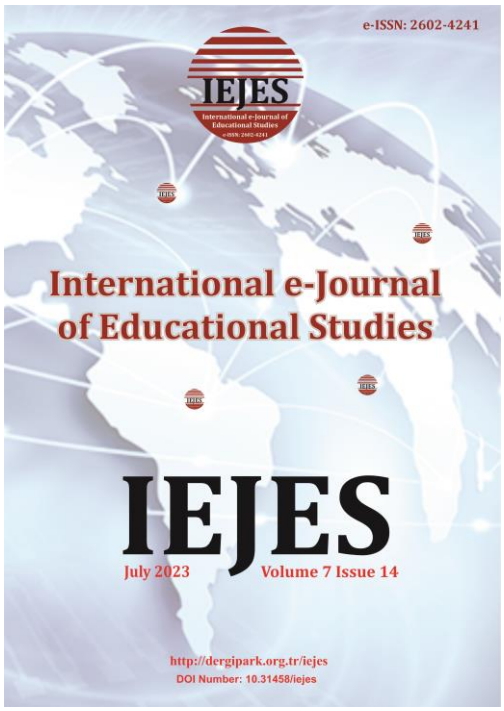

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Article Name	Group Antagonism as a Social Problem in Award-Winning Children's Books: Stereotype, Prejudice, Discrimination

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Abstract

From the perspective of language and literature education, children's and youth books should be sensitive to the culture of human rights and democracy and should not endorse group antagonism such as stereotype, prejudice and discrimination. The main purpose of this research is to determine if there are any messages about group antagonisms in the award-winning children's and youth stories/novels; and to understand the emotional aspect, style, context and content characteristics of those messages. The data source of this general survey model research consists of a total of 34 books that have received awards from various institutions and organizations in the field of children's and youth literature. In the content analysis, the main category of group antagonism was divided into three subcategories: *stereotype*, *prejudice* and *discrimination*, which were further divided into sub-categories based on *emotional aspect*, *style*, *context*, and *content* and analyzed in cross-tables. The findings showed that most messages were in the *prejudice* category. In addition, it was determined that the messages that foster group antagonism were mostly related to the affective dimension and were conveyed in a blatant style and often without malicious intent. Within the scope of this study, it is recommended that fictional books addressing children and young people should address group antagonism with a critical and problem-oriented approach.

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Research Article

Group Antagonism as a Social Problem in Award-Winning Children's Books: Stereotype, Prejudice, Discrimination*

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Abstract

From the perspective of language and literature education, children's and youth books should be sensitive to the culture of human rights and democracy and should not endorse group antagonism such as stereotype, prejudice and discrimination. The main purpose of this research is to determine if there are any messages about group antagonisms in the award-winning children's and youth stories/novels; and to understand the emotional aspect, style, context and content characteristics of those messages. The data source of this general survey model research consists of a total of 34 books that have received awards from various institutions and organizations in the field of children's and youth literature. In the content analysis, the main category of group antagonism was divided into three subcategories: *stereotype*, *prejudice* and *discrimination*, which were further divided into sub-categories based on *emotional aspect*, *style*, *context*, and *content* and analyzed in cross-tables. The findings showed that most messages were in the *prejudice* category. In addition, it was determined that the messages that foster group antagonism were mostly related to the affective dimension and were conveyed in a blatant style and often without malicious intent. Within the scope of this study, it is recommended that fictional books addressing children and young people should address group antagonism with a critical and problem-oriented approach.

Keywords: Children's literature, group antagonism, stereotypes, prejudice, discrimination, Turkish language education

1. INTRODUCTION

The culture of human rights and democracy is the existence of fundamental rights and freedoms that belong to every human being. Throughout history, various national, regional, and international mechanisms that protect the culture of human rights and democracy are developed; punitive sanction measures are created by considering that those rights might be violated. In addition to this, democracy, as a regime that is based on popular sovereignty, has provided a natural environment to protect human rights. Nonetheless, looking at the historical process, it is seen that judiciary laws considering human rights and democracy are not sufficient to create a culture in society. Because the culture of human rights and democracy uphold a lifestyle that enables people to become equal citizens, lead a life following privilege and justice, participate in cultural life freely, develop themselves in the scopes of emotions and ideas, produce in a peaceful environment (Fuat, 2000; Sever, 2018). The development of this culture depends on people indigenizing human rights and democracy, putting them into practice in every field of their life, and developing a manner of life on that. For this reason, it comes into the picture that even though judiciary laws are prior conditions for the culture of democracy, they are not sufficient.

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In order for the human rights and culture of democracy to provide sufficient conditions, it is required to adopt universal humane morals in all areas from daily-life practices to organized manners, from literature to education. A society consisting of persons, organizations, and institutions adopted those values endeavors through lifelong questioning, criticizing, and developing sentience instead of conceding stereotyped emotions and ideas. Thus, they constitute life not according to the normative values of social groups built upon natural differences such as sex, sexual orientation, ethnical roots, age, physical appearance, and disability; but according to ethical values. That means being able to minimize the destructive effect of every marginalizing, discriminative, exclusionary action, and behavior on people/society, and building a more fair-minded world order. The first and most important step of this is to deeply analyze and notice the already existing group antagonism. By noticing group antagonism, which can hide in veiled purposes or cannot be noticed since it does not attract attention at once, that exists even in the most ordinary conditions, human rights and the culture of democracy can naturally develop.

Group antagonism, a term specific to the field of social psychology, is defined as the situation that appears when the members of a group named *ingroup* adopt negative manners towards members of another group named *outgroup* by Taylor, Peplau, and Sears (2015). The terms *ingroup* and *outgroup* in this definition point out adopting a stereotyped identity according to social classifications such as sex, race, religion, and age; therefore, discriminating between *we* and *they*. For instance, expressions starting with phrases such as *we, women…* or *we, men…* lead to consolidating sexism by shaping attitudes and behaviors towards women and men in society. This case may legalize the creation of a social distance between the *ingroup* and *outgroup*; one group exercising power over the other; emotional/economic/physical violence.

Group antagonism consists of three sub-constituents: *stereotype, prejudice,* and *discrimination.* These constituents, respectively, correspond to cognitive, affective, and behavioral dimensions (Taylor, Peplau, & Sears, 2015). In other words, the cognitive dimension of group antagonism is defined by *stereotype,* the affective dimension by *prejudice,* and the behavioral dimension by *discrimination*. *The stereotype* is the first constituent of group antagonisms and corresponds to the cognitive dimension. This term is defined as the beliefs of group members (Taylor et al., 2015) related to the most common characteristics in the scope of group antagonisms. Other stereotype definitions in the literature may be listed as "Characteristics that are believed to exist in a certain group of people" (Myers, 2015), "making either positive or negative reference to people only because of belonging to a group", "common beliefs towards the characteristics that are thought to belong to a member of a cultural or ethnocultural group" (Berry, Poortinga, Brugelmans, Chasiotis, & Sam, 2015), "an unfounded belief or idea about a group of people" (Paker, 2013). Moreover, Bilgin (2016) states that stereotypes are simplified depictive classifications used for defining another person or a group of people, as Hortaçsu (2014) states that they are based on beliefs related to a societal group (sexuality group, minority group, ethnical group, the elder, children). As indicated by Gökdağ (2016), a stereotype is the gathering of characteristics believed to be shared by all members of a societal class. It's a genre of a diagram based on a specific characteristic such as sex, race, occupation, physical appearance, location, or being a member of an organization or a group. Gerrig and Zimbardo (2016) indicate that the stereotype is a generalization in which the same characteristic is assigned to every member of a group. Likewise, Whitley and Kite (2010) indicate stereotypes as beliefs and views about features of characteristics, attributions, and behaviors of various societal groups. Thus, it comes into the sight that a stereotype is a cognitive generalization about social classifications. In other words, stereotypes are societal problems that lead to prejudicial attitudes and discriminative manners that form the first phase of group antagonisms that are based on social classifications.

Prejudice is the second constituent of group antagonism and corresponds affective dimension. This term is identified as mainly negative emotions towards a target group (Taylor et al., 2015) in

terms of group antagonism. Other definitions of prejudice in the literature may be listed as anger-hostility towards the members of the group due to unfavorable characteristics associated with a societal group (Allport, 2016), adopting a prejudice involving negative considerations towards the members of a group or the members of the group (Myers, 2015), assuming a negative or hostile attitude towards people of a certain group only for them being members of a group (Aronson, Wilson, & Akert). Moreover, Stone (2015) indicates that prejudice is a belief or assumption that is determined by some people or groups mostly without realizing, which regulates how that person or the group should consider a series of topics. Brown (2004) mentions it includes degrading considerations or affective beliefs towards the members of a group due to them being the members of that group, and Gerrig and Zimbardo (2016) remark that it corresponds an acquired manner towards a target object. Apart from maintaining the idea of prejudice being a manner, some researchers mention it corresponds in a very negative manner rather than being positive. In this context, Berry et al. (2015) define prejudice as a "generally negative tendency towards cultural or ethnical groups rather than the individual's group", Baron and Byrne (2000) define as "negative attitude towards the members of some societal groups", and, Bilgin (2016) defines as "negative manner that is generated in advance, without any real proof, towards the members of a certain group". As is seen from these definitions, "prejudice" is adopted stereotypes turned into negative manners.

Discrimination is the third constituent of group antagonism and corresponds to the behavioral dimension. This term is defined as "performing attitudes that cause benefit losses of people only because of their group membership" (Taylor et al., 2015). Other definitions of discrimination in the literature may be listed as "performing injustice attitudes towards a group or the members of that group" (Myers, 2015: 309), "performing negative or detrimental acts towards the members of a group only because they are members of a group" In addition to this, Flowers (2013) mentions that "it is done to prevent a person from fully benefiting from political, social, cultural or economic rights", as Baron and Byrne (2000) indicate that "it consists of negative behaviours towards the social groups that are the objects of prejudice." According to Berry et al., (2015), discrimination is "treating individuals differently because of the racial or cultural group they belong to" and to Baron and Byrne (2000) it is "performing negative behaviors towards the members of the societal groups that are the targets of prejudice". Kağıtçıbaşı and Cemalcılar (2016) define discrimination as "performing negative acts toward a member or members of a group only because of the negative manner towards that group", as Bilgin (2016) defines as "the individual being subjected to negative deeds and behaviors only because of their membership to a certain group. Yaşın-Dökmen (2015) mentions that discrimination is the behavioral indicator of prejudice and stereotype, and suggests that the behavioral tendency and purposes towards the prejudiced group/individual take the form of discrimination transforming into open behaviors and acts. Group antagonism is a multi-layered phenomenon that has psychological, societal, historical, and cultural dimensions. Throughout the historical process, numerous and various theories were developed to explain this phenomenon. These theories are *Psychodynamic Theory, Sociocultural Theory, Intergroup Relations Theory, Cognitive Theory, and Evolutionary Theory.*

Psychodynamic Theory explains the reasons for group antagonisms with psychological defense processes (Whitley & Kite, 2010). The years following World War II, members of the Frankfurt School Horkheimer, Marcuse, Adorno, and Fromm headed toward researching the spiritual characteristics enforcing oppressive administrations. Especially Adorno (2011) developed the term *authoritarian personality* presuming that there is a meaningful relation between prejudice and the characteristics of conservatism. According to this term, it is suggested that people who were subjected to oppression during early childhood are bound to authority unconditionally and develop hostility against those that do not obey social norms.

Sociocultural Theory suggests that there is a strong connection between group antagonism and the structure and culture of the society (Whitley & Kite, 2010). According to this theory, group

antagonisms appear to reinforce the hierarchical order, and, become stronger with peoples' common acceptance. Most children learn about the group effect at an early age and use words with degrading pronouns when angry or using bad words (Gürses, 2005). In short, even though prohibitions, laws, and moral rules do not approve of group antagonisms, sociocultural structure indirectly causes it to reinforce. In the 1960s, the sociocultural perspective started giving place to the intergroup relations perspective and started analyzing only negative effects in contrast with analyzing both negative and positive effects before.

Intergroup Relations Theory: suggests that the competition for reaching the limited sources on earth leads to fair sharing problems and this is the main reason for group antagonisms (Whitley & Kite, 2010). According to this theory, the starting point of the group antagonisms is societal classification. Societal classification is a system created by these tendencies. According to Demirtaş-Madran (2013b), "societal classification leads to individuals sense that the similarities between the individuals of their groups and the differences between their group and other groups more than they are and exaggerate them.

Cognitive Theory: suggests that the tendency of the obligation of storing the information coming from societal life in the human brain and taking the most correct decisions in the shortest period lies underneath group antagonisms (Kayaoğlu, 2015; Taylor et al., 2015; Whitley & Kite, 2010). In cognitive theory, the society is considered as a source of information. Therefore, this theory is also named *Social Cognition Theory* (Aronson et al., 2012; Kayaoğlu, 2015; Hogg & Vaughan, 2017). Shortly, this theory suggests that sensing and thinking style based on societal groups is natural, practical, and inevitable.

Evolutionary Theory suggests that genetical, biological, and evolutionary infrastructure lies beneath group antagonisms (Taylor et al., 2015). About this, remarked that just like animals, people felt the need of separating those who are proper to contribute from those that are not, and classifying the ones that look like them as "friends" and the ones that do not as "enemies".

The phenomenon of group antagonism has various constructional features regarding the characteristics of emotional aspect, style, context, and content. *Characteristics of emotional aspect* indicate the positive or negative manner of the speaker/narrator in an expression that includes the phenomenon of group antagonism. According to this, the speaker/narrator sometimes performs positive, sometimes negative, and sometimes both positive and negative manner about this point in question. Looking from the perspective of children's literature, the characteristics of emotional directions of group antagonism are closely related to the term *message*. As mentioned by Sever (2012), the message in the literature works means emotion or idea cooperation that the artist wants to create in the reader. From this point of view, it can be said that the way of approaching group antagonism in children's literature is a determinant of group antagonism.

Group antagonism may carry three sub-characteristics regarding emotional aspect characteristics: *positive, negative,* and *mixed*. *Positive* characteristic is the expressions that do not approve, consolidate, or reproduce group antagonisms; yet they are terminal expressions that help to contribute to decreasing group antagonisms. Similarly, "it consists of positive expressions regarding messages and meanings such as progression, acquirement, increases, development, rising" as a term of *emotional direction analysis* (Tavşancıl & Aslan, 2001). Suspecting, being one of the *positive* prejudices of the emotional direction of group antagonisms, involves thinking and behaving patterns in a large field such as criticizing stereotypes, developing human rights and the culture of democracy, grounding on ethical information, understanding *the other,* slanting towards the right and the oppressed (Çuhadar-Gürkaynak, 2013; Morin, 2013). Contrarily, the *negative* characteristic involves thinking and behaving patterns that support, consolidate, and empower group antagonisms which lead the widespread discriminative culture. In addition to these, a third, combination idea exists in which both *positive* and *negative* manners are together. Upon this subject, Whitley and Kite (2010) mention

that the reactions regarding group antagonisms may be seen as positive, negative, or mixed. *Stylistic properties* are the characteristics that define the differences in group antagonisms regarding the level of incidence. Group antagonisms vary in large perspectives such as noticeable at first sight in plain view, not easily noticeable, veiled, or completely hidden. Kağıtçıbaşı and Cemalcılar (2016) list this variety under two categories as *visible* and *latent*. According to this, *visible* group antagonisms are clear, and do not require to be hidden and direct; as *latent* group antagonisms are blatant, subtle, and covert. Benokraitis and Feagin (1995) put group antagonisms in three categories: *blatant, subtle,* and *covert.* Whitley and Kite (2010) also mention that this category being the easiest in the matter of expression is followed by the categories of *blatant, subtle,* and *covert.*

The *characteristics of context* are the characteristics that execute how group antagonisms that reach out from a personal condition to a cultural phenomenon are represented in different levels. Whitley and Kite (2010) mention that group antagonisms are seen in four different context as *interpersonal discrimination, organizational discrimination, institutional discrimination,* and *cultural discrimination,* and that there is a transitional continuity between those levels even without a certain line. According to this, the *interpersonal* level corresponds to group antagonisms that might be seen between persons; *organizational* is in organizations such as workplaces, companies, or administrations; *institutional* is in social institutions such as family, economy, health, and education; *cultural* level in common persuasions and standard of judgments.

Characteristics of content are the characteristics that explain the so-called reasons for group antagonisms. In literature (Düzen, 2015, Flowers, 2013; Whitley & Kite, 2010), content characteristics of group antagonisms focus mainly on discrimination. Flowers (2013) puts discrimination under seven categories: discrimination based on *race, ethnical and cultural origin, stranger hostility, gender, religion, sexual orientation* and *disability*. Düzen (2015) usually puts the places of discrimination into three categories: *gender, ethnical origin,* and *sect.* In addition to this, he discusses "the ethnical origin and sect" class that is seen together and falls into another discrimination group in multi-bases. Whitley and Kite (2010) put the areas that prejudice is seen in five categories: *race, religion, social class, gender and sexual orientation, age, ability, and appearance*. Erdoğan (2013) mentions six types of discrimination: *sexual discrimination, race and ethnical origin discrimination, religious discrimination, age discrimination, physical appearance discrimination,* and *class discrimination*.

There are numerous negative results of group antagonism in terms of personal and societal perspectives, and, they may lead to the consolidation of group antagonism by affecting each other. For instance, culture may affect teachers on how to teach in in-class educational conditions, as it affects students on how to learn. In the same way, teachers with their own cultural background may, intentionally or unintentionally, tend to ignore the academic success of students that have a different cultural identity (Gay, 2014). Therefore, the society affecting the people and people affecting the society leading the outcomes of group antagonisms reach a serious level. That's why it is necessary to analyze group antagonism separately in both personal and societal manners and define the mentioned correlation.

Personal outcomes of group antagonism: are various such as loss of self-esteem, fear of stereotypes, weakening in trust towards justice, arising violence tendency; consolidation of the emotions of anger, grudge, and hate. One of the personal outcomes of group antagonism is the loss of self-esteem (Aronson et al., 2012). A person facing group antagonisms may start seeing himself as insufficient and worthless; may have problems revealing his gifts and secret powers, taking healthy decisions, and developing a coherent and calm sense of self. For instance, a student subjected to negative behaviours regarding his ethnical origins may start hiding his identity or seeking a new identity that will provide the comfort of being ordinary (Gay, 2014).

Another personal outcome of group antagonism is the fear of stereotypes (Aronson et al., 2012; Myers, 2015; Taylor et al., 2015). In literature, this term is identified as a person sensing a

devastating concern thinking that he will be evaluated based on that negative stereotype when faced with it (Myers, 2015). For instance, an African American student may have a concern regarding affirming the stereotype of a cognitive deficiency in an academic exam. He might think that if he fails, he might show both himself and his race badly. Having extra concern in such an exam decreases the possibility of the student showing his real success (Aronson, et al., 2012). Another personal outcome of group antagonism is the problem of understanding. Upon this subject, Morin (2013) mentions that the problem of understanding is empowered by egocentrism, ethnocentrism, and sociocentrism, meaning that a real struggle against discrimination should be performed by focusing on the ethnocentric and sociocentric origins of the discrimination rather than its symptoms.

Whitley and Kite (2010) define the outcomes of group antagonism in cognitive, affective, and behavioral dimensions. According to this, an individual not making a meaningful connection between *the reason* (i.e. being a woman) and *the result* (i.e. not having a promotion despite deserving) may break the logical system and may damage the perception of reality (cognitive result). This result may cause the person to develop a manner of not believing in the academic talent or sufficiency, sensing intimidation, and withdrawing from the work-life (effective result). The person may behave aggressively with a sense of being deterred, may harm around himself, or perform discrimination toward others (behavioral result).

Group antagonism has social outcomes such as social labeling, moral exclusion, legalizing discrimination, dehumanization, hate, lynching, massacre, fear, and a culture of violence. Moreover, as Goffman (2014) mentions, it may lead to more people being labeled as perverted and restarting the process of hostility. Hence, according to Morin (2013), "labeling somebody with a tag instead of understanding a person with his versatile personality is a way of knowing and perceiving that is problematic, degrading, and simplifier". Because "violence is a human rights violation" (Flowers, 2013: 259).

Decreasing group antagonisms is a long and hard period that requires people, organizations, institutions and altogether the society to cooperate. The outcomes of group antagonism are seen at personal and societal levels. *Processes at the personal level* hold a great share in decreasing group antagonisms, though, this is the level where the most resistant obstacles to overcoming the stereotypes exist; because it is a very difficult task for people to face their own personalities and to accept that expressions starting with "I am not racist, but…", "I wouldn't like to be discriminating, but…", "I know it is not right, but…" (Blum, 2002; Guillaumin, 1995; Köker & Doğanay, 2010) are in fact accepting that they are directly discriminative. Upon this subject, remarks that examining oneself constantly may provide a person to see the personal lacks/weaknesses, grow away from egocentrism and perform self-regulations with the method of introspection.

In addition to these, it is suggested that methods such as stereotype suppression, reflecting thinking, communication, empathy, introspection, and self-regulation (Demirtaş-Madran, 2013a; Hogg & Vaughan, 2017; Morin, 2013; Paker, 2013; Taylor et al., 2015; Whitley & Kite, 2010) may be beneficial in a personal level. Yet, temporary applications regarding the elimination of only the visible effects of group antagonisms will not be efficient in the long term; a more permanent solution might be required (Taylor et al., 2015; Whitley & Kite, 2010). Thereby, questioning every kind of dogmatic idea, manner, and behavior with consciousness, and then regulating life in accordance with this is considered the most efficient way to decrease group antagonisms.

Processes of the societal level involve the required processes for permanent solutions to group antagonisms; because even though awareness about the outcomes of group antagonisms is important, it is not enough for the complete development of human rights and the culture of democracy. For group antagonisms to decrease visibly, peoples, organizations and institutions must apply their strategies and must gain a societal-wide currency. People and organizations in the field of the educational process have a great role in recognizing that group antagonism is a societal problem and

developing solution proposals. In order to especially develop susceptibility regarding language and education, there are many conditions that the teacher of language and literature must beware of such as the curriculum, teaching methods, communication with the students, and the class environment. Moreover, since children's and youth literature is at the center of language and literature education, it is highly important to analyze books that are in accordance with the age and progress of the child, and that discuss group antagonisms in a problem-centered frame and help change those problems in a way that supports the culture of democracy. Fictional pieces such as stories and novels provide messages that support the individual to build healthy societal relations as they may also contribute the societal development starting from early childhood. However, as mentioned by Aslan (2010), submitting fanatically to a certain authority, belief or ideology, making too many inferences with very little or limited proof, making excessive generalizations, making a negative evaluation about others, supporting prejudicial and stereotypical ideas, egocentric and dogmatic conditioning, labeling, rushed thoughts are the major obstacles before the creation of the thinking skills. It is required that children's stories/novels that hold a respected place in society's perspective due to winning awards from various institutions and organizations should be subjected to research.

Investigating the literature, even though there are various works about award-winning children's books (Aslan et al., 2016; Creany, 1995; Iwamoto, 1996; Marquez, 2008; Ünelöz, 2017), no work regarding the group antagonism is noticed. For instance, the topic of the piece is discussed in a work of children's and youth literature that is considered worth an award (Aslan et al., 2016). In another work, award-winning children's novels were analyzed in the scope of gender stereotypes. The methods of solving the conflicts of the protagonist in a children's novel are analyzed and the conflicts in the social scale were searched in this manner (Karagöz, 2014). Nevertheless, there is no information on whether there are messages about group antagonisms in children's and youth stories/novels; yet there are no works that conclude these content characteristics in a holistic scope.

The main purpose of this research is to determine if there are any messages about group antagonisms in the award-winning children's and youth stories/novels; and to understand the direction, shape, level and content characteristics of those messages, if any.

1. Are there any messages that involve *stereotypes* in award-winning children's and youth stories/novels? If so,
    - 1.1. What is the emotional aspect of those messages?
    - 1.2. What are the stylistic characteristics of those messages?
    - 1.3. What are the context characteristics of those messages?
    - 1.4. What are the content characteristics of those messages?
2. Are there any messages involving *prejudices* in award-winning children's and youth stories/novels? If so,
    - 2.1. What is the emotional aspect of those messages?
    - 2.2. What are the stylistic characteristics of those messages?
    - 2.3. What are the context characteristics of those messages?
    - 2.4. What are the content characteristics of those messages?
3. Are there any messages involving *discrimination* in award-winning children's and youth stories/novels? If so,
    - 3.1. What is the emotional aspect of those messages?
    - 3.2. What are the stylistic characteristics of those messages?
    - 3.3. What are the context characteristics of those messages?
    - 3.4. What are the content characteristics of those messages?

2. METHOD

2.1. Research Model

The research was carried out based on the single survey model, which is a subtype of the general survey model. Single survey models are research models made to determine the quality or quantity of the variables one by one (Karasar, 2016). Accordingly, for the research, group antagonism, which is the main category, and its sub-categories were described one by one and singularly.

2.2. Study Group

The determination of the study group started with the definition of the study population. Defining and delimiting the study population requires general and specific criteria. These criteria determine the type of units in the population, their location, and other detailed features (Karasar, 2016). In order to limit the population of the study, firstly the institutions that meet *the general criteria* were determined, and then the limitations were made in line with the specific criteria. General criteria aim to determine the institutions that award children's and youth books. In this determination, (i) the institution/organization being Turkey-based and national in nature, (ii) awarding works in the genre of children's and youth literature were determined as two basic criteria. It was observed that there are 11 institutions and organizations that meet these criteria: Akademi Bookstore, Dünya Kitap Journal, Bu Publishing House, Children and Youth Publishing Association, Gülten Dayıoğlu Children and Youth Literature Foundation, Tudem Publishing, Çınar Publishing, Günışığı Library, Can Publishing, Ankara University Child and Youth Literature Application and Research Center (ÇOGEM), Association for Supporting Contemporary Life. *The special criteria* used to limit research objects that meet the general criteria are: (i) the awarding institution has given literature awards for at least five years (between 2007 and 2012), (ii) the awarding institution has given an award to a children's and youth book at least once in 2012-2016, (ii) the book is a short story or novel (iv) the book was written by adult authors, not by children's authors. As a result, 6 out of 11 institutions were eliminated, and the children and youth stories/novels awarded by the remaining 5 institutions in 2012-2019 were determined. Accordingly, the study group consisted of 34 children's and youth books, of which 16 were short stories and 18 novels.

2.3. Data Collection and Analysis

The data collection tool of the research is documentary scanning. According to Karasar (2016), documentary scanning includes the processes of finding sources for a specific purpose, reading, taking notes and evaluating them. The data obtained in the research were first written down in the word processing program, arranged and made ready for analysis. Then, a coding chart was prepared with the context units on the horizontal and the categories on the vertical, and the data were transferred to the relevant sections of the chart. QSR Nvivo Plus 12 for Windows, one of the computer-aided qualitative data analysis programs, was used to accelerate the data management and analysis process and to make it auditable.

2.4. Data Analysis

In this study, the content analysis method was applied in the analysis of the data. In this direction, qualitative and quantitative approaches used in the content analysis were integrated. Çebi (2003) states that the qualitative approach focuses on the content of communication, examines relationships, and is impressionistic and descriptive. He stated that the quantitative approach focuses on the concrete indicators in the content of the communication and is based on the frequency distributions as the basis for the inferences. In this research, in line with the qualitative approach, categorical analysis and emotional aspect analysis and in line with the quantitative approach frequency analysis were used. In addition, both explicit and hidden content was taken into account while analyzing this research. "Explicit content consists of visible statements, and hidden content consists of the underlying meanings of what is expressed. The hidden content is determined by revealing the

hidden expressions through metaphor, avoidance, intuition, etc. (Özüdoğru, 2016; Tavşancıl & Aslan, 2001). In content analysis, the data were analyzed in four stages: coding of data, finding themes, organizing codes and themes, identifying and interpreting findings (Yıldırım & Şimşek, 2011). In this study, the data were analyzed according to the following four stages in the specified order.

Coding of data: It is the first stage of content analysis. As Yıldırım and Şimşek (2011) stated, at this stage, the data were examined in general and divided into meaningful sections. Because the use of the theme is suggested in the literature as an analysis unit, in cases where words, sentences and paragraphs are not suitable as analysis units, in the investigation of values/attitudes (Tavşancıl & Aslan, 2001: 65), *the theme* was chosen as the analysis unit. Since the conceptual framework that forms the basis of the research is clear, *coding according to predetermined concepts* was made. In short, in the coding of the data, all subcategories of the main category of *group antagonism* were made according to the subcategories previously determined in various studies (Benokraitis & Feagin, 1995; Jones, 2002; Erdoğan, 2013; Taylor et al., 2015; Whitley & Kite, 2010) in the literature. In line with the purpose of the study, the main category of content analysis was determined as group antagonism. The main category is divided into two; primary subcategories and secondary subcategories. Primary subcategories include the main components of group antagonism; Secondary subcategories express its structural features. Primary sub-categories are divided into three subcategories: *stereotype*, *prejudice* and *discrimination*. Because it is stated in the literature that there are three main components of group antagonism (Aronson et al., 2012; Çuhadar-Gürkaynak, 2013; Hogg & Vaughan, 2017; Taylor et al., 2015). Secondary subcategories are divided into four subcategories as *emotional aspect* (Tavşancıl & Aslan, 2001), *style* (Benokraitis & Feagin, 1995), *context* (Whitley & Kite, 2010), and *content* (Erdoğan, 2013).

Finding Themes: Three types of analysis were made in content analysis: Categorical analysis, emotional aspect analysis, and frequency analysis. The analyzed data were subjected to coding query and matrix coding query processes in the Nvivo package program.

Organizing codes and themes: It is important in terms of defining, explaining, and presenting the data in a way that the reader can understand. It is necessary to define the data in various parts of the data set under the same code or theme and present this information in a related way according to the emerging concept/theme (Yıldırım & Şimşek, 2011). In this research, arrangements were made in line with the pre-test application and expert opinions/suggestions.

Identifying and interpreting findings: Since at this stage it is necessary to give meaning to the collected data, draw some conclusions from the findings, and explain the importance of the results obtained (Yıldırım & Şimşek, 2011), the frequency scores of the findings are presented with cross tables and the text examples are explained with their justifications.

2. 5. Reliability and Validity

Reliability means that the research process is consistent. This consistency means that constant results are obtained even when the research process is conducted at different times or by different researchers. Content analysis was applied to the data obtained in this study. Detailed definition of categories in content analysis increases reliability (Tavşancıl & Aslan, 2001). For this reason, an extensive literature review was made before the coding processes in the research and the categories were determined in line with the theoretical framework of the study. Before the actual application, a pre-test application was made on five books selected by simple random sampling. The pre-tested books are: K1 (İhsan, 2012), K2 (Avcı-Çakman, 2016b), K3 (Servi, 2015), K4 (Sözbilir, 2015) and K5 (Hepçilingirler: 2013).

Another study to ensure the reliability of the research is the measurement of independent observer agreement. This study, to measure the agreement between independent observers, is realized together with a faculty member who has studied in the field of children's literature and has experience

in content analysis. First, various reading and analysis applications were made with the independent observer. For the independent observer's coding, three books were selected from the study group list by simple random sampling method: K4 (Sözbilir, 2015), K9 (Dikici, 2014), and K22 (Büke, 2013). The following formula was used to calculate the agreement between independent observers: Reliability =Agreement/(Total Agreement + Disagreement) (Miles & Huberman, 1994, as cited in Tavşancıl & Aslan, 2001: 81). It was 0.92 in K4, 0.92 in K9 and 0.91 in *K22*. Since the agreement between independent observers is expected to be above 0.70 in the literature (Karasar, 2016), it was concluded that the values obtained in this study were sufficient to provide internal consistency.

To ensure the validity of the research, a plan was created in line with the suggestions developed in the literature (Miles & Huberman, 2016). According to this plan, the opinions of field experts were consulted on defining the uncertainty areas and estimating the accuracy of the results. In addition, the questions developed by Miles and Huberman (2016) to check internal validity in scientific research were taken into account in all processes of the study. In addition, detailed explanations were made about how the coding was done under the title of *data collection and analysis* to ensure external validity. In the *findings* section, examples of how and why the context units were coded are given. The context in which these examples are used and their social meanings are explained in brackets.

2. 6. Ethical Committee Approval

With the decision of the Ankara University Sub-Ethics Committee dated 06.05.2019 and numbered 204, it was unanimously decided that ethics committee approval is not needed because there is no clinical research conducted on humans in this study.

3. FINDINGS

Distribution of the sub-categories in the 34 books examined under this study is shown on Table 1.

Table 1. Distribution of sub-categories by frequency score

	Primary Subcategories			
	Stereotype	**Prejudice**	**Discrimination**	**Total**
Secondary Subcategories				
Emotional Aspect	175	718	501	1394
Positive	30	96	159	285
Negative	143	602	312	1057
Mixed	2	20	30	52
Style	175	718	501	1394
Blatant	43	240	275	558
Subtle	114	387	181	682
Covert	18	91	45	154
Context	175	718	501	1394
Interpersonal	22	99	50	171
Organizational	1	18	28	47
Institutional	39	169	182	390
Cultural	113	432	241	786
Content	236	1061	713	2010
Gender/Gender Orientation	87	337	160	584
Race	8	57	51	116
Religion	4	18	15	37
Age	77	387	198	662
Ability/Appearance	40	157	117	314
Social Class	20	105	172	297

As seen on Table 1, distribution of the *group antagonism* main category among primary sub-categories is as follows: *prejudice* (*f*: 718), *discrimination* (*f*: 501) and *stereotype* (*f*: 175). In other

words, messages containing group hostility most prominently fall under the "prejudice" category, followed by *discrimination* and *stereotype*, respectively.

3. 1. Findings on the First Sub-Question

In the study it is found that of the 34 books in the study group 30 books include messages containing stereotypes, while 4 books (K21, K24, K31, K34) do not.

3.1.1. Sub-categories related to emotional aspect

The first sub-purpose under the first sub-question of the study is to determine the *emotional aspect* of the messages containing *stereotype* in award winning children's and youth stories/novels. Samples in this category include:

- *Positive:* That one on the right, looks like a dwarf, a fancy dwarf… We call these people "dwarf", but is it not rude to do so, does it not hurt them? (K30, p.5). (Criticizing the word "dwarf" which constitutes hostile humor.)
- *Negative:* "Old people are more sensitive." (K8: p.166). (Generalization regarding old people.)
- *Mixed:* Despite his painful experiences and his bowleg, he spent his days at the side of his granny, listening to fairy tales, like in a fairy tale. He never saw the old lady pull a long face or get angry at anything (K6, p.84) (Generalization (stereotyping) regarding disability -negative- as well as criticism of this stereotype -positive-.)

3.1.2. Sub-categories by style

The second sub-purpose under the first sub-question of the study is to determine the *stylistic* properties of the messages containing *stereotype* in award winning children's and youth stories/novels. Samples in this category include:

- *Blatant:* Isn't this the voice of the old and senile woman on the third floor of Smile Apartment? I turn my head toward the door. The old woman is approaching me, her hair and her face shifting constantly (K1: p.86). (Openly saying the neighbor is old and senile.)
- *Subtle:* Always the same trick! We'll see, we'll see … Do you think you have a kid before you? Who are you stalling, who do you think you are fooling? (K26, p.138). (Suggesting that children cannot be taken seriously and can easily be pushed over.)
- *Covert:* "You're going! Good. Then you have to get out of the bed. Look at the time?" Mother turns into an alien in the morning! (K22, p.20). (The caregiver of the family being the mother constitutes a sexist stereotype.)

3.1.3. Sub-categories by context

The third sub-purpose under the first sub-question of the study is to determine the *contextual* properties of the messages containing *stereotype* in award winning children's and youth stories/novels. Samples in this category include:

- *Interpersonal:* "If I show you, describe you the place, could you go and collect some mori flowers? Can you go all the way to that mountain?" When asking this question Mother Lokman was looking at the naked bowleg of Duckleg (K6, p.28). (Stereotype is contained in the dialogue between Mother Lokman and Duckleg.)
- *Organizational:* While Fat Semiha was saying, "Let's not go too far. What would change if we lied down along those bushes and rest some! Then we can find some weeds, some bugs, some flowers or something and then show ourselves," while eating the umpteenth hamburger (K2, p.72).

- *Institutional:* He is a dad, and dads cannot get hurt. They are always strong, they cannot go down, they cannot get sick (K20, p.57). (Stereotyping the sexist characteristics ascribed on fathers in the family structure.)
- *Cultural:* Big fish eats the small fish, is an adage meaning strong will dominate the weak. If you take this adage at face value, you might also lose your faith to fight against challenges. (K29, p.80). (This adage expresses cultural hierarchy)

3.1.4. Sub-categories by content

The fourth sub-purpose under the first sub-question of the study is to determine the properties of *the content* of the messages containing *stereotype* in award winning children's and youth stories/novels. Samples in this category include

- *Gender/Sexual Orientation:* She observed with the patience of a mother and understood the matter down to the finest detail (K10, s.112). (The expression "patience of a mother" contains social sexism towards the woman.)
- *Race:* "Do you know this inn?" I asked. "Gypsies know all inns," he said. I look at his face, he was genuinely serious (K22, p.105). (The expression "gypsies" contains generalization regarding ethnicity.)
- *Religion:* One of the children made a new suggestion, "Let's go to the Infidel's Cemetery to hunt birds." The place called the Infidel's Cemetery was quite close to their "cove" (K5, p.71). (The expression "Infidel" contains generalization regarding non-Muslims.)
- *Age:* When saying old aunt first thing that comes to my mind is dentures, I can't help it. We had an old aunt, all her teeth were dentures… (K18, p.53). (Contains ageist generalization that old people are unhealthy and deficient.)
- *Ability/Appearance:* Well, are ya deaf like'n the churn of aunty Sat'lık? Who're we talking to just now? (K10, p.16). (The expression "deaf" contains patronizing speech regarding people with hearing disability.)
- *Social Class:* They searched the entire dormitory, but couldn't find my beautiful jacket. The skirts Nagehan's mother sewed were found in the locker of the richest, most beautiful girl in the class! We were very surprised and very sad (K19, p.82). (The assumption that rich people will steal but poor people will not is a stereotype of social classes).

3. 2. Findings on the Second Sub-Question

In this study it is found that of the 34 books in the study group 32 books include messages containing prejudice, while 2 book (K24, K32) do not.

3.2.1. Sub-categories related to emotional aspect

The first sub-purpose under the second sub-question of the study is to determine the *emotional aspect* of the messages containing *prejudice* in award winning children's and youth stories/novels. Samples in this category include:

- *Positive:* Demirhan looked at the back of this old man, surprised at seeing how quick he could move despite of his advanced age (K16, p.165). (Criticizing the prejudice assuming old people are deficient in physical abilities. Affirming an equitable relationship in regard of ages.)
- *Negative:* The old man either slept or made a long face all the way, he did not even say two words so I did not have any change to invite him to a game. More, towards the end of the journey he completely snapped, kept making calculations. In short, it was very tough to travel with old people" (K10, p.10). (Affirming negative attitude towards old people.)

- *Mixed:* Sadly, Gabby is a mute dog, but he can think. Granny named him Gabby because he thinks a lot. She used to say "He is Gabby in his head" (K6, p.67). (Calling a mute dog “Gabby” is a hostile joke and pitying him is a negative attitude. However, emphasizing his abilities also shows a positive attitude.)

3.2.2. Sub-categories by style

The second sub-purpose under the second sub-question of the study is to determine the *stylistic properties* of the messages containing *prejudice* in award winning children’s and youth stories/novels. Samples in this category include:

- *Blatant:* Aunty Kerkes was aware this creature was no threat for them. Because this creature only disliked men. It would not pester women (K17, p.177). (Strong creatures, even when imaginary, only addressing men affirms the belief that women are too weak to take seriously.)
- *Subtle:* Don't get fooled that she always talks of books when the teacher is around, Nisanur loves babies. I think all girls are like that anyway! (K15, p.84). (Assuming it normal, natural and customary for female children to be brought up with sexist motherhood roles.)
- *Covert:* He thought of Uncle Kasım, Aunt Dudu. They were not like the teacher friends of his mother and father. He never witnessed them looking for a better life. He never heard them complain even for a day despite all the poverty and pain they went through. They said ‘it is fate.’ He heard many time Aunt Ümmü say ‘It is our destiny’ (K5, p.84).

3.2.3. Sub-categories by context

The third sub-purpose under the second sub-question of the study is to determine the contextual properties of the messages containing *prejudice* in award winning children’s and youth stories/novels. Samples in this category include:

- *Interpersonal:* I got old now, I chewed the words quite enough until we arrived here (K1, p.127). (According to the narrator the reason for their deficiency in self-expression is their advance age. This prejudiced attitude occurs in the personal context which is a type of interpersonal context.)
- *Organizational:* We went to the principal’s office in excitement. Fatnose also liked the idea of a theatre play a lot. But his fat nose started to go red when we told him what we would play: “Grown kids walking around in front of statesmen dressed like fruits and vegetables? No, that won’t do!” (K2, p.27). (The expression “statesmen” shows that as an organization there is a hierarchy between the students and the managers.)
- *Institutional:* God damn it, I missed it again. What would it matter even if I caught up, I could not gather my thoughts to prepare a response since I was dealing with this shrew. The girl walked off already. Mange! (K10, p.57)." (The expression "shrew" contains hostile humor and constitutes sexist prejudice based on narrator's dislike of the girl.)
- *Cultural:* “Beşir… Beşir get up son, stop fussing around! Evening is no time for sleep! It will eat out of your life.” […] “Mom, why would sleeping in the evening eat out of my life?" "I don't know son. Our elders used to say it in our childhood." (K12, p.13-14). (Accepting every advice of elders without question indicates a hierarchy between the elderly and the youth in the cultural context.)

3.2.4. Sub-categories by content

The fourth sub-purpose under the second sub-question of the study is to determine the properties of *the content* of the messages containing *prejudice* in award winning children's and youth stories/novels. Samples in this category include:

- *Gender/Sexual Orientation:* Ada, looking like the youngest of the house, is the most coddled. Her name should have been Nazlı (Coy). In fact, Ali is as coddled as she is, but he is a boy, so he does not make so much fuss (K19: p.30). (The narrator explains the character differences between Ali and Ada with norms based on social sexism.)
- *Race:* The God made people from the earth, put them into an oven to bake them, like the soldiers in the emperor's tomb. Some of the people in the oven were baked too much, so they came out black. The river arrived and took them to Africa. Then the river returned and took the people who baked too little and came out white to Europe. The people who were baked just the right yellow remained in China (K21, p.37). (This mythical narration on race makes the assumption that skin color is related to level of maturity.)
- *Religion:* "Damn infidel, look how you pushed me into the trap!" (K10, p.25). (The expression "infidel" goes against freedom of belief. The narrator has a negative attitude towards the "infidel".)
- *Age:* Children of the house grew up, and I got old of course. To confess, I am offended by this turn of affairs. What to do! I would hunt after birds, mice, bugs across the garden for the entire day when I was young. Now I can hardly catch the flies sitting on my nose (K29, p.35). (Narrator assumes the reason of their deficiency is their advanced age. They hold a negative attitude regarding aging.)
- *Ability/Appearance:* Aunt Behice is a good woman. She is blonde, tall … looks like a European woman. She wears pants like them. With her long, thin fingers bedecked with rings, her painted nails, she is one of the most beautiful women of the town I think. And she bakes wonderful cookies. Mom also bakes cookies for us sometimes, but they are like stones. Those of Aunt Behice are soft, melt in your mouth, like angel cake… (K19, p.36). (A woman with European looking physiognomy is also assumed to be superior in regard of her skills.)
- *Social Class:* Was what made the difference between the two lives only the fact that his father was a village boy? "If so, it is not fair," thought Barış. If it is about work, they also worked; even including the children, day and night, summer and winter. Or was it like Uncle Kasım said, there is something called destiny and would not change no matter what you did? What determined their fate then? The village, or the city? They were city people in the village, village people in the city, or neither one or the other. What were they then? (K5, p.91). (Criticizing the view associating the class difference between village people and city people with fate. Inequality based on social class difference is criticized with a positive attitude.)

3.3. Findings on the Third Sub-Question

In this study it is found that of the 34 books in the study group 29 books include messages containing *discrimination*, while 5 books (K14, K24, K31, K33, K34) do not. In other words, a total of 501 examples in 29 of the examined books include messages containing discrimination.

3.3.1. Sub-categories related to emotional aspect

The first sub-purpose under the third sub-question of the study is to determine *the emotional aspect* of the messages containing *discrimination* in award winning children's and youth stories/novels. Samples in this category include:

- *Positive:* I went and scolded Samet. "I would get hurt if you called me Jug-Eared," I told him. "Wouldn't you get hurt if I called you fatty?" (K12, p.101). (Criticizing the hostile humor in the expressions "Jug-Eared" and "fatty", assuming an equitable attitude.)
- *Negative:* You filled Hatay! There is no peace left because of you. No one's home is left unbothered by thieves in the neighborhood. You run and take refuge here, then you thieve

without shame." (K12, p.70) (Immigrants / refugees are associated with thievery and a negative attitude towards these people is affirmed.)

- *Mixed:* "I don't know about that son…" then motherhood instinct took over: “but you better stay away from that guy [Crazy Hasan] anyway.” “Why aunty. Does he do any harm?” “No son, we haven't seen any harm from him yet.” (K10, p.23). (A hostile nickname like "crazy" is ascribed to a mentally handicapped person, affirming a prejudiced attitude. However, this expression is questioned and it is expressed that mentally handicapped people are harmless in fact, thus assuming an equitable attitude. This narration contains both positive and negative attitudes and is therefore coded in the mixed category.)

3.3.2. Sub-categories by style

The second sub-purpose under the third sub-question of the study is to determine *the stylistic properties* of the messages containing *discrimination* in award winning children's and youth stories/novels. Samples in this category include:

- *Blatant:* They pushed the slave to the center. Thinking he would be whipped again he started swearing. It went on for minutes. Then he got tired and quietened down." (K10, p.183). (Physical violence against the slave constitutes a hostile action.)
- *Subtle:* I told Halebi, “Our face shows we are Syrian.”. How, he asked. I don't know, it just shows. No one gets close to us (K12, p.115). (Putting social distance against Syrian immigrants is a discriminatory action which is not obvious at first glance.)
- *Covert:* The part about Kurds was also full of very bad words. More, the teacher brought the question onto Kurdish. I heard it was the same at my older sister's time. The historian says there is no such thing as Kurdish. Told us the myth that these names are derived from the kard kurd noises made when Mountain Turks walked on the snow. What would you say? I lifted my hand. I tried to tell Kurdish belongs to Indo-European language family, but he shut me up" (K26, s.55). (Dismissing existence of a language actually means dismissing the existence of the community speaking that language, and therefore constitutes a hidden, purposeful and often maliciously motivated discriminatory act.)

3.3.3. Sub-categories by context

The third sub-purpose under the third sub-question of the study is to determine *the contextual properties* of the messages containing *discrimination* in award winning children's and youth stories/novels. Samples in this category include:

- *Interpersonal:* This is not fair! I want to go after Pi too… Why am I this fat anyway; I better start dieting on Monday … (K9, p.61). (The narrator holds a hostile attitude against themselves by calling themselves as "fat".)
- *Organizational:* [Speaking to the hospital secretary] “What does it mean 'you can't see the doctor without an appointment'? I come all the way from Gölayna. Why would I need to have an adult with me? I am thirteen and I can get examined by myself. Where is the doctor? (K8, p. 135). (A hospital as an organization refusing to examine young patients constitutes organizational discrimination.)
- *Institutional:* And also father always says, “In this house we make decisions together, we are people who believe in democracy," he thought uneasily. “Democracy, hah!” he grumbled out loud this time. “What democracy this is! They didn't even listen to what I thought!” (K16, p.8). (Failure to make democratic decisions in a family as a social institution constitutes institutional discrimination.)

- *Cultural:* But for a Gypsy family it is not easy to leave the neighborhood in a rush and go somewhere else. They need to find a place which would accept them or a place which is so poor they would not make any noise about it (K22, p.48). (Rejection of gypsies from the neighborhood and placement of social distance against them constitutes cultural discrimination.)

3.3.4. Sub-categories by content

The fourth sub-purpose under the third sub-question of the study is to determine the properties of *the content* of the messages containing *discrimination* in award winning children's and youth stories/novels. Samples in this category include:

- *Gender/Sexual Orientation:* Everyone listening to Blacksnake other than one were men, because it was frowned upon for women to attend gatherings of men by the magician customs in Baratholia […] (K23, p.42-43). (Rejection of women and men sharing the same physical environment constitutes sexist discrimination.)
- *Race:* While walking I saw a black man approaching on the road. I immediately held the button of my cardigan and did not speak a single word to Ayşe until we arrived at Uncle Mehmet's, and I did not answer her questions either. […] This time I pointed to the button of my cardigan. Then she understood. Because all children know this in our neighborhood. There is a chocolate colored woman and a man in Silivri. Whoever sees one of them immediately holds their button, and does not speak until they see someone they know (K19, p.42-43). (Acting according to superstitions related to people of color and stopping speaking when seeing them constitutes racial discrimination.)
- *Religion:* It is told people who refused to worship idols, people who believed in Prophet Jesus were oppressed in the times of Emperor Decius. They hung people over the walls and gates of the city to intimidate everyone (K29, p.39). (Applying physical violence to people of a different faith constitutes discrimination.)
- *Age:* "You are still little, you will learn." "Not at all, I am only three years younger than you." "You are still smaller!" My face fell (K19, p.27). (Talking down to and belittling a person of younger age constitutes ageist discrimination.)
- *Ability/Appearance:* Because if you are an angel and you cannot fly that means you are "disabled." In fact, I am not disabled, only everything gets in my way (K20, p.5). (The narrator blaming themselves for their disability is discrimination on basis of ability / appearance.)
- *Social Class:* They immediately blamed the poor old man – probably because he was poor. He must have taken the purse when pulling the coin out of the apprentice's ear, they said. (K10, p.136). (Accusing poor people as potential thieves constitutes discrimination on basis of social class.)

4. DISCUSSION and CONCLUSION

In the children's and youth books analyzed in this study, it was observed that there were 1394 messages containing group antagonism. In some of these messages, it was revealed that the phenomenon of group antagonism was handled with a problem-oriented approach, aiming to develop a critical perspective and social sensitivity in the reader. This shows that there is no direct malicious purpose such as increasing the culture of violence, reinforcing hostile attitudes, and legitimizing discrimination in the examples examined. In other words, these examples do not intentionally lead readers to be sexist and racist. On the contrary, by dealing with various life situations within the plot, they call the reader to question the culture of human rights and democracy and to develop a critical perspective on the discrimination that exists in society.

In these examples where the reader is given the responsibility of thinking, the reader is supported to grow up as a free and autonomous individual. Because these messages, which do not have an authoritarian and didactic approach, provide models of how the reader can take a democratic stance against stereotypes, prejudices, and discrimination, which are social problems. In these examples, the issue of group antagonism is deliberately included so that the reader can meet not with an artificial and rosy life that is detached from reality and divorced from social problems, but on the contrary, with the reality that exists in daily life, that has spread to almost all of society, that has become institutionalized and part of the culture.

The examples in question have qualities that can increase the reader's experience of group antagonism and prepare them for life. The reader who questions group antagonism in books through critical reading will also be sensitive to group antagonism in real life. By transferring the experience gained in literary fiction to the reality of life, the reader will be able to develop cognitive, affective, social, and moral development. On the other hand, in some of the books analyzed, there are examples that reinforce group antagonism, even if unintentionally, and show group antagonism as an ordinary, normal and natural situation, thus reinforcing discriminatory culture. These examples have characteristics that can negatively affect thoughts, attitudes, and behaviors through linguistic patterns, which are the transmitters of culture.

When the distribution of the 1394 messages coded under the main category of group antagonism in this study is examined, it is seen that these messages are concentrated in the categories of *prejudice*, *discrimination*, and *stereotype*, respectively. In this case, it is revealed that group antagonism is mostly in the nature of prejudice and discrimination, while there are a small number of group antagonisms in the nature of stereotypes. In other words, the phenomenon of group antagonism is generally reflected in books with affective and behavioral dimensions. There are also examples that do not have any affective or behavioral dimension and remain only in the cognitive dimension.

When the distribution of the 1394 messages coded under the main category of group antagonism in the analyzed books to the "sub-categories related to the emotional aspect" was examined, it was seen that these messages were included in the *positive*, *negative*, and *mixed* categories, respectively. When the content characteristics of these books (character, place, time, plot, etc.) were analyzed holistically, it was observed that none of the books in the study group affirmed group antagonism; on the contrary, all books implicitly conveyed the importance of human rights and democratic culture. It can be said that the examples in the *positive* category address group antagonism in a problem-oriented manner, while many narratives in the negative category are unconsciously and unintentionally reinforced. In a small number of examples, the combination of both positive and negative features provides the reader with opportunities for discriminative reading and critical thinking. These results show that a clear sensitivity has begun to emerge on some issues related to group antagonism in children's and youth books. This result is similar to other studies in the literature. Aslan et al. (2016) found that award-winning works of children's and youth literature are handled in a way that supports peaceful life. Ussery (2006) found that racist stereotypes are largely overcome in award-winning children's books. Iwamoto (1996) found that Caldecott award-winning children's books address stereotypes based on age, gender, and ethnicity from an egalitarian and multicultural perspective. In this regard, as Gay (2014) points out, stories are a powerful tool for children to build bridges between people and other factors that separate them, such as race, culture, gender, and social class, and to feel the value of unity and integrity.

When the distribution of the 1394 messages coded under the main category of group antagonism in the analyzed books into stylistic category is analyzed, it is seen that these messages are categorized as subtle, blatant, and covert, respectively. In other words, in the books examined, group antagonism is generally seen in examples that are not noticed at first glance. Since group antagonism in these examples are generally accepted as natural, normal, and legitimate by society, these examples

are not perceived as group antagonism and are not seen as a problem. On the other hand, although few in number, there are also clear and distinct narratives about the phenomenon of group antagonism that can be seen at first glance. This may be because, as Hogg and Vaughan (2017) point out, it is now illegal to be openly racist and is not welcomed by society.

When the distribution of the 1394 messages coded under the main category of group antagonism in the books examined was examined, it was seen that these messages were included in the *cultural*, *institutional*, *interpersonal*, and *organizational* categories, respectively. In the books analyzed, group antagonisms are generally seen as a part of cultural life and take place as a part of the traditions, customs, stereotyped beliefs, and habits of the society. Since every piece of literature bears the cultural traces of the nation that created it, the children's and youth books examined also carry the behavioral patterns at the cultural level and naturally reflect the group antagonism that exist in society. However, in the books analyzed, it was observed that group antagonisms are strengthened by various social institutions, especially family and educational institutions; in other words, social institutions are effective in the reproduction of group antagonisms. The fact that even group antagonisms at the individual or interpersonal level are often rooted in social and institutional structures shows that group antagonisms are a large, plural, and social phenomenon rather than a small, singular, and individual event. In short, group antagonisms in children's and youth books are usually not based on the individual choices of the characters, but on an organized and institutionalized social order. This result is similar to the views in the literature. In fact, researchers agree that group antagonism is a social problem (Whitley & Kite, 2010).

When the distribution of the messages coded under the main category of *group antagonism* in the analyzed books to content-related subcategories is analyzed, it is seen that these messages are categorized under age, gender/sexual orientation, ability/appearance, social class, race, and religion, respectively. In the analyzed books, group antagonisms in the *age* category are directed especially toward children and the elderly. Those directed at children were often reinforced by stereotypes that children are uninformed and inexperienced; those directed at the elderly were often reinforced by stereotypes that the elderly are dependent and in need of care. In addition, it was found that attitudes and behaviors in the *age* category were often shaped together with other categories; especially *gender/sexual orientation* and *ability/appearance* categories were closely related. In addition, it was observed that in the books examined, group antagonism based on *gender* was generally focused on gender, while *sexual orientation* was not mentioned except for a few limited examples. Similarly, Aslan (2010) found that women are presented from a sexist perspective in the 100 Basic Works recommended for children and youth. Gündüz-Şentürk (2015) also found that sexist stereotypes in illustrated children's books published for preschool children continued in some areas, although they decreased in some areas. Oskamp, Kaufman, and Wolterbeek (1996) also found that there are sexist stereotypes in award-winning children's books addressed to preschool children and that gender equality is not fully achieved. Vannicopulou (2004), in her study on the presentation of women in children's picture books in Greece, found that women are characterized as types rather than characters.

In the books analyzed, it was observed that group antagonism in the ability/appearance category focused especially on disability. However, these books were not addressed with a malicious purpose such as blaming, punishing, or marginalizing disabled people, but on the contrary, with the aim of ensuring social understanding and integrity. The literary fiction in the books can be considered as an opportunity for the reader to realize the stereotypes about the disabled and to take responsibility for change. Because in the books analyzed, disability is seen as a fact of life and handled with an empathetic understanding. On the other hand, a significant portion of group antagonism in this category focuses on other physical/physical characteristics. As a reflection of language and social assumptions, it has been observed that there are jokingly derogatory words and nicknames about the body such as "cowardly fat, greedy glutton, earth gnome" and these reinforce group antagonism.

Ussery (2006) also found that in award-winning contemporary children's books, the author generally did not use offensive or derogatory language. However, when subtle and implicit forms are taken into consideration, it can be argued that group antagonism continues to exist in closed forms.

In the analyzed books, it was determined that group antagonisms in the social class category focused especially on dichotomic categories such as rich and poor. In these categories, wealth is associated with power, arrogance, and evil, while poverty is associated with inadequacy, innocence, and goodness. The examples in the books sometimes criticize these distinctions and seek a more egalitarian world order, and often justify and legitimize social groupings. It was also observed that distinctions such as peasant-urban, educated-uneducated or occupational differences were also effective in determining social class. In this regard, İpşiroğlu (2013) stated that traditional values are not questioned in children's and youth literature in order not to contradict society and that it is preferred to write in line with social expectations. In this study, it was observed that different dimensions of the social structure were not addressed. New and contemporary forms of group antagonisms based on class/stratum do not find a place in the books. For instance, depending on the purchasing power, the distinctions related to owning/not owning new scientific and technological equipment and therefore participating/not participating in social life, in short, the "digital divide", are not yet sufficiently addressed in children's and youth books.

In the books analyzed, it was observed that group antagonism under the category of race focuses not on explicit/classic forms of racism but on new/cultural forms of racism. In other words, in the historical past, distinctions such as Black-White or East-West no longer exist; rather forms of everyday racism based on differences in language, ethnicity, food culture, customs and traditions are observed. Explicit/classic forms of racism are explicitly criticized in the books, but new/cultural forms of racism are not criticized as they are not immediately visible, not noticed or taken for granted. In the books analyzed, group antagonism based on "religion" are generally seen in linguistic structures such as "infidel, giaour, demon". There is no open and direct discrimination against religion and belief systems, and readers are not forced to adopt a certain ideology. Religious differences are generally treated as an element of culture and sensationalized with messages that reinforce religious tolerance. This result is similar to Çatalcalı-Soyer's (2009) finding that religious symbols and prejudices are used very little in her study of preschool children's storybooks.

In light of the results of this study, various practical and research suggestions can be made. Within the scope of practical recommendations, language and literature education should aim to raise individuals who are sensitive to group antagonism and multicultural education methods that are sensitive to cultural values should be applied in this direction. Differences should be respected, diversity should be valued and a democratic, equal, fair, and peaceful classroom climate should be created. Language and literature teachers should have knowledge and experience about the cultural values of students of different genders, sexual orientations, races, languages, religions, sects, and ethnic origins and should structure their teaching situations in cooperation with students to reflect this diversity. Texts used in language and literature classes (textbooks, supplementary books, reading books, etc.) should be sensitive to group antagonism. Especially in fictional/literary texts, the phenomenon of group antagonism should be addressed and problematized as a fact of life and human reality. Within the scope of the research recommendations, similar studies should be conducted not only in fictional texts such as stories and novels but also in informative texts such as textbooks and children/youth magazines. Unlike this study, the categories obtained from the data should be included in the content analysis, not standardized categories. In addition, the effect of children's and youth books sensitive to group antagonism on children/youth should be revealed through experimental studies.

Ethics Committee Decision

This research was carried out with the permission of Ankara University Social and Human Scientific Research and Publication Ethics Committee with the decision numbered 06-204 dated 06.05.2019.

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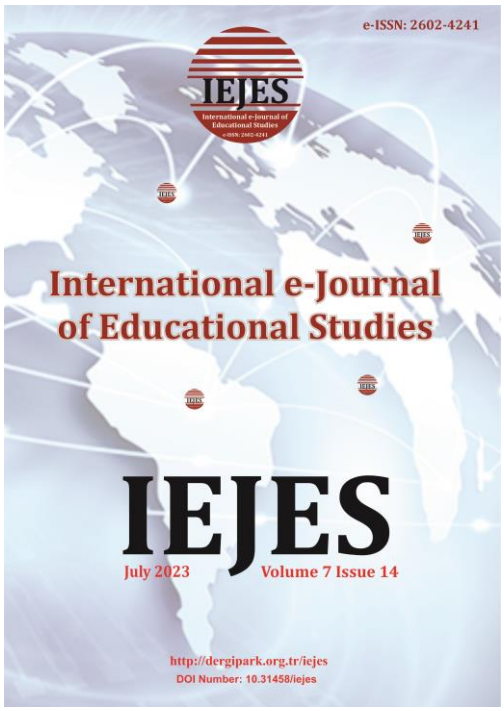
APPENDIX

Study Group List

No.	Book title	Author	No.	Book title	Author
K1	Yokluk Bahçesindeki Kayıp Melodi	Ümit İhsan	K18	Amber'in Zaman Kapsülü	Figen Gülü
K2	Gülen Sakız Ağacı	Koray Avcı Çakman	K19	Leylek Havada	Leyla Ruhan Okyay
K3	Karakura'nın Düşleri	Hanzade Servi	K20	Atla	Mercan Aytuna
K4	Eyfel'i Kim Yedi	Özlem Kılıçarslan Sözbilir	K21	Aydede Her Yerde	Hacer Kılıcıoğlu
K5	Türkü Çocuk	Feyza Hepçilingirler	K22	Mevzumuz Derin	Ahmet Büke
K6	Düşlerin Peşindeki Çocuk (Ördek Ayak)	Koray Avcı Çakman	K23	Karayılan	Onur Gürleyen
K7	Komşumuz Çok Acayip (Mezarlıktaki Gölge)	Miyase Sertbarut	K24	Kırmızı Kanatlı Baykuş	Feridun Oral
K8	Kora ile Kelebek	Hanzade Servi	K25	Lolita ile Pan	Burhan Günel
K9	Bayan Pimpirik	İclal Dikici	K26	Dört Kozalak	Karin Karakaşlı
K10	Işıldayan	Aydın Arif	K27	Kumpanya Nula	Kadriye Bakşi
K11	Yaşasın Ç Harfi Kardeşliği	Behiç Ak	K28	İnsan Kendine de İyi Gelir	Ahmet Büke
K12	Kuş Olsam Evime Uçsam (Beşir)	Güzin Öztürk	K29	Kedinin Kanadı Olsa	Filiz Özdem
K13	Farklı ama Aynı	Feridun Oral	K30	Tablodaki Prenses	Tevfik Taş
K14	Piraye'nin Bir Günü	Arslan Sayman	K31	Değirmenci ile Baykuş	Göknil Genç
K15	Sihirli Kutu	Fatih Erdoğan	K32	Dedemin Ayçiçeği Tarlası	Gamze Pat
K16	Kibele'nin Gölgesinde	Yasemin Yücesoy Gündoğan	K33	Atıştırmalık Öyküler	Elif Yonat Togay
K17	Düşler Kasabasında Bir Yaz Tatili	Cemil Karakullukçu	K34	Bambaşka Bir Dünya	Koray Avcı Çakman



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Abstract

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Research Article

Integration of Social Studies and English: Prospective Teachers' Views "Feeding two birds with one scone?"*

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Abstract

This study aims to examine the process of developing interdisciplinary lesson plans for prospective English and social studies teachers using the Content-based language instruction model (CLIL) and through collaborative work. The participants of the study consisted of 30 prospective English and 10 prospective social studies teachers who were continuing their pre-service university education in one of the western provinces of Turkey. A qualitative approach was used to answer the research problem, and data collection tools consisted of questionnaires, semi-structured group interviews, and lesson plans. Both descriptive and content analysis was used to reach inferential results. As a result of the research, it was understood that pre-service teachers' own learning experiences affect their beliefs about their teaching experiences. Besides, it was understood that the 4C model, which can be used in CLIL, is specifically suitable for social studies. In line with these results, suggestions were made for future studies.

Keywords: CLIL, ELT, social studies, teacher education

1. INTRODUCTION

Curriculum integration is a method of teaching that puts the student's needs first and focuses on a theme from various subject areas and real-world problems. An integrated curriculum is not a novel method of education. Progressivists in education began to voice concerns about the curriculum's fragmentation in the 1920s due to the division of knowledge into different fields (Eisner, 1992). Progressives like John Dewey and Jean-Jacques Rousseau assert that to ultimately involve a child in learning, schoolwork should be related to the outside world, and extracurricular activities should spark the child's interest. Concern was voiced about secondary schools only existing to provide pupils with the qualifications needed for college, as opposed to educating students, at the Progressive Education Association National Convention in 1930 (Goodlad & Su, 1992).

Researchers claim that this strategy helps students understand essential topics (Kinniburg & Busby, 2008). Including social studies in core topics is a beneficial strategy that emphasizes the development of in-depth knowledge through integration, especially in minimizing the amount of isolated information taught to students (Hollaway & Chiodo, 2009; Martis & Boyd, 2009). Integrated contexts empower students to recognize and articulate how their learning across all subject areas relates to themselves and the various disciplines they are exposed to in social studies instruction. Additionally, integrative thinking meshes with content-area goals of strengthening students as active and reflective contributors within a participatory, pluralistic democracy, according to Hinde (2009) (cited in Barton & Levstik, 2004) .

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One of the courses that can be associated with social studies is English (Dallinger, Jonkmann, Hollm & Fiege, 2016). A way of associated social studies with English courses the content and language integrated learning (CLIL) method in language instruction, often known as the content-based teaching model, has grown in popularity in recent years because this instruction strives to educate pupils as language users rather than language receivers. This dual-oriented educational strategy uses a second language to teach and acquire both language and content (Coyi Hood & Marsh, 2010). The barriers between language courses and other courses are dismantled in this way, and other courses are employed as the primary subject in creating language teaching content. Social studies course can be one of these (Dallinger et al., 2016). Lessons in social studies and English can include a variety of subjects that aim to educate students for life as productive citizens, such as fostering global sensitivity, making wise decisions, exercising critical thought, and increasing self-awareness. Namely, the social studies course, which strives to educate students for life as responsible citizens, and the English course can be linked.

1.1. Content and Language Integrated Learning (CLIL)

The modern push for an integrated curriculum dates back to 1929 when The National Council of Teachers of English (NCTE) launched an innovative, interdisciplinary curriculum project under the leadership of Ruth Mary Weeks. She asserted that English must be used in multiple contexts across all content areas (Bordelon, 2010). The power of this movement has fluctuated during the ensuing 70 years. The trend toward integrating language and social studies instruction in elementary schools has recently been resurgent (Dallinger et al., 2016). However, little empirical research has yet to be done to evaluate the effectiveness of such approaches. In parallel with this approach to language teaching, another method called Content and Language Integrated Learning has grown throughout Europe over the last two decades and is gaining popularity (Perez-Canado, 2012). CLIL is an educational strategy in which a subject and a foreign language - typically English - are taught and learned side by side (Goris, Denessen & Verhoeven, 2019). CLIL aims to promote both subject and language learning by combining the mother tongue and a foreign language in a single class (Eurydice, 2006). The overwhelming discontent with the L2 learning methods that were in use in the 1980s and 1990s, which were viewed as ineffective, particularly from a communicative perspective, catalyzed the European region's readiness for CLIL (Goris et al., 2019).

The anticipation of the positive impacts of CLIL on students' foreign language abilities is supported by several second language acquisition theories (Dallinger et al., 2016). The input hypothesis (Krashen, 1985) and interaction approach (Gass & Mackey, 2007) contend that language acquisition occurs as a result of exposure to enough comprehensible input and opportunities to use the language in conversation and other contexts. Such chances abound in CLIL classrooms, where the amount of foreign language input is significantly higher than it is for typical English learners and where students are encouraged (but not required) to use the foreign language (Eurydice, 2006). To examine the impact of CLIL on different linguistic abilities in the context of English as a foreign language, Goris et al., (2019) reviewed 20 years' worth of longitudinal studies. The results show that only a small number of comprehensive studies—and only a handful of them on a big scale-were conducted in Europe. The conclusions give definite cues regarding the situations in which CLIL yields noticeably higher L2 results. It is challenging to distill CLIL into a single notion. Though CLIL has been implemented in some form or another in nearly every European country, its beginnings and implementation in various countries have diverse histories (Goris et al., 2019). Coyle et al., (2010) summed up its defining characteristics as a blend of effective teaching methods in which expressive language and pertinent subjects are interwoven, allowing scaffolds for growth in both, with the inclusion of cultural awareness and intercultural understanding.

1.2. Four C's Framework

The four C's Framework consists of content, communication, cognition, and culture (Coyle et al., 2010).

1.2.1. Definition of 4C's framework

The "content" that refers to the subject comes first in the 4C's framework (Coyle et al., 2010). The framework's creators emphasize in this section that effective language learning happens when students study the language thematically through material drawn from a variety of subject areas, including history and science. The second element of the framework is "communication," which goes beyond the conventional scope of a grammar education. Therefore it is maintained that students should master the language to be able to utilize it and get knowledge from it. The third component of the 4C's paradigm is "cognition," which is strongly related to the value of challenging students to build new skills and knowledge by active involvement in cognitive processes rather than relying on the transfer of knowledge from an expert.

The last of the 4C's framework's components is "culture," which aims to raise learners' awareness of their own and other cultures. In addition, with the help of authentic, culture-appropriate CLIL materials, learners can be given the fundamentals of a global perspective, intercultural awareness, and an understanding of the similarities and differences between cultures.

1.2.2. Why should 4C's framework be used?

The social studies and English language teaching programs have already established topics of people, places, habitats, culture and heritage, individuals, and society. Beyond the conventional methods of teaching grammar, the prospective teachers used games and matching exercises. They worked on tasks that demanded higher-level abilities like decision-making and empathy in addition to learning new ones. The goal of social studies is to increase students' awareness of both their own and other cultures. 4C framework was employed as a result.

To illustrate, while creating a timeline about the lives of scientists in the lesson, students employ social studies course abilities like historical empathy with temporal change and continuity. On the other hand, as the target language, "the past tense" is used. Besides, other skills, such as working in groups and pairs and understanding speech acts (e.g., describing and making conclusions), are strengthened, contributing to second language development. In this study, students are either expected to do these or carry out games and creative drama activities besides the above-mentioned skills and techniques.

Lastly, language through learning is predicated on the notion that learning happens through language and thinking. Unlike traditional language classrooms, learners in the context of CLIL need to learn the language to enhance their cognitive processes mentioned in the language triptych while also gaining language competencies (Coyle et al., 2010). In practice, each of these elements, namely; content (subject matter), communication (language), cognition (learning and thinking), and culture (social awareness of self) must be handled as a whole because they are interconnected (Ji, 2019). In parallel with this research, we examined the interconnection of the Social Studies and English lessons via the 4C.

In addition, given the paucity of relevant studies in Turkey (Kassymova & Çiftçi, 2020), this study is expected to shed light on integrating social studies and English courses. In this context, the problems of the research were determined as follows:

1. How did EFL and social studies prospective teachers determine the content focus of integration with social studies and English?
2. What kind of a process did the pre-service English teachers go through while preparing CLIL according to the 4C framework?

3. What are the obstacles or opportunities in preparing interdisciplinary lesson plans from the perspective of social studies and English language teacher candidates? What are their views on the positive and negative aspects of the process?

2. METHOD

By using a qualitative research approach, the research problem was attempted to be resolved. In a descriptive case study (Yin, 2003), prospective English and social studies teachers are examined. This study describes the process of linking social studies and English in addition to creating a lesson plan together. This study is a part of large-scale research. This article is only devoted to case study of English language teacher candidates lesson plans, and views of integration social studies. Besides, social studies teacher candidates' views on integration were examined.

2.1. Participants of the Study

The participants of the study consisted of 30 English and 10 Social Studies prospective teachers in a state university in the Western part of Turkey who were selected via purposive sampling. The participants were selected from among the 3rd-grade prospective English language teachers who had taken the "Teaching English to Young Learners I" course and 3rd-grade prospective Social Studies teachers who had taken the "Social Studies Teaching I" course on Social Studies teaching, because in these courses prospective teachers learn how to teach and plan lessons in constructivist ways.

2.2. Data Collection Tools and Data Collection Process

Open-ended questionnaire, lesson plans and focus group interviews were used as data collection tools. In constructing these, social studies and English language teaching experts' opinions were obtained for all data collection tools.

Firstly, the prospective teachers were asked to write whether English lessons could be combined with other lessons. Then they were asked whether social studies could be combined with other lessons so that their opinions on the subject were taken before they started the practices. Afterward, social studies and prospective English teachers were asked how social studies and English could be integrated. With these inquiries, an effort was made to comprehend their initial thoughts. At the end of the implementation, all participants were asked to write their views again. Besides, prospective English language teachers were required to participate in focus group interviews.

2.2.1. Open-ended questionnaire

Prospective teachers were asked to write their views and reflections on integrating different courses. Namely, the following questions were directed to both groups of students:

Can associations be made between their courses and other courses? If so, which courses can be integrated? How? (When they have finished answering these, the rest of the questions were directed)

Do you think English and social studies courses' subjects can be integrated?

If yes, what can be the positive/negative aspects of the integration of Social studies and English courses?

As a result of their simultaneous delivery, which guaranteed time savings, prospective teachers' opinions were compiled in writing.

2.2.2. Lesson plans

Both prospective teacher groups were asked to collaborate and write integrated plans. In writing their plans, they have used the 4C framework and similar objectives in ELT and social studies courses.

2.2.3. Focus group interviews

Focus group interviews were only carried out with prospective English teachers, because they were the ones who created the lesson plans. Focus group questions were composed of the following four questions and audio-recorded for further analysis with the participants' permission.

1. How did you come together with prospective social studies teachers in the project?
2. What are the positive/negative aspects of integrating Social studies and English courses?

3. Would you like to study with another course teacher again?
4. Is there anything that you would like to ask?

Focus group interviews were conducted to explore how they made decisions during the preparation of the lesson plans and whether there was anything else they wanted to add to their written statements and to provide triangulation.

2.3. The Process

The participants of the study were required to write their opinions on whether English lessons could be integrated with any other course. If the answer was positive, they were asked which course/s they would name. Thirdly, they were asked whether social studies can be combined with English. Additionally, their suggestions about how these two lessons can be integrated were taken. Likewise, prospective social studies teachers were inquired whether social studies can be integrated with any other course and which one/s. Social studies prospective teachers were also asked whether it is possible to integrate social studies and English.

As the second step of the study, both researchers announced some information about the research process. Afterward, prospective English teachers were grouped with social studies prospective teachers. They were given two weeks to meet and make a lesson plan that integrates social studies and English courses. Social studies prospective teachers acted more like counselors in social studies programs. They were asked to decide on their shared or similar program objectives when they met. The groups developed lesson plans in line with the objectives and learner needs. Although they were asked to meet face-to-face, they sometimes had to meet online. Thirdly, after they had finished their plans, prospective English teachers presented them within the scope of the "Teaching English to Young Learners II" course. These plans were evaluated by their classmates and the course instructor.

The fourth step was taking participants' views on the process with written reflections. Lastly, five focus groups were conducted to examine prospective English language teachers' views on decision-making processes in collaborative plan preparation. Through data triangulation, the researchers tried to understand what pre-service teachers thought and what process they had experienced. This data triangulation gave an in-depth perspective of their opinions about the integration experience.

2.4. Data Analysis

All data were written down, compared with each other, and subjected to inferential analysis. The lesson plans prepared by the prospective teachers were subjected to content analysis according to the CLIL 4C lesson plan. During the whole process, the data were analyzed by one of the researchers at two different times to check for consistency. Codes were used instead of the actual names of the prospective teachers; for instance, the prospective English language teacher is abbreviated as PELT, and the prospective social studies teacher is PSST.

3. FINDINGS

The study's findings will be analyzed in detail in this article section. The analysis of the qualitative data will be shared under two headings; findings related to prospective teachers' views on the integration of different courses and the creation of CLIL lesson plans.

3.1. Findings Related to Prospective Teachers' Views on the Integration of Different Courses

This section will present English and prospective social studies teachers' views on integrating different courses.

3.1.1. Prospective English teachers' views on the integration of different courses

Without giving information about the content of the project, English and social studies teachers were asked to answer the following questions in written form before the implementation:

Table 1. Prospective English teachers' views on integration before the implementation

Questions	Sample extracts	Frequency
Can English be integrated with other courses?		
Yes (n=30)	English is a world language	18
	English is present in all aspects of life	8
	It can be if the English level of the learners is appropriate.	4
Which courses can be integrated?		
	Science and maths lessons	22
	Social areas	5
	Daily life subjects	3

All participants stated that this was possible (n=30). They explained these views with three main reasons. These are "English is a world language (n=18)," "English is present in all areas of life (n=8)" and "associations can be made depending on the level of the students (n= 4).

Participant 15 explains that English, as a world language, can easily be integrated into other subjects. *"Yes, I think it is possible; English can be used in all areas of life and can be integrated with all courses. Therefore, other courses can be taught in English, or the content of other courses can be utilized in English courses"*. PELT 28 emphasized the importance of this integration. This integration can help learners to understand the specified topic better and in a multidimensional way.

The prospective teacher PELT 29, who stated that this association is possible, but there is a prerequisite for it, expressed his/her views in the following lines:

"*Associating English with other courses depends on the students we teach. If the English level of the students we teach is sufficient, it is possible to combine English with other subjects*". Prospective teachers stated that this combination is primarily used in science and mathematics courses (n=22), social areas (n=5), and topics related to daily life (n=3).

Most pre-service teachers (n=21) stated that this combination could be more straightforward, especially with numerical courses. The student coded PELT 8 explained this situation as follows *"In science, basic knowledge and subjects can be explained by simplifying the solid, liquid, and gaseous state of water, for example"*. The student coded PELT 7 also stated his views: "*English can be easily explained in some numerical courses. Since mathematics is a course taught with numbers by nature, the English sentences interspersed can be easily understood"*. The pre-service teachers claimed that English could be more readily associated with numerical courses, and the main reason is that numerical courses have many formulas. For these prospective teachers, it will be easier to explain the steps and give instructions in maths and English. Among the students who think that social sciences can be associated with English language lessons, PELT student coded 18 stated his/her opinion in the following way. "*Yes, when students learn useful information in a foreign language, they can adapt to the language more easily. For example, the subject explained in Turkish in the social studies course can be repeated in English as a discussion.*"

PELT 19, who stated that geography topics could be associated with English lessons, defended her view: "*Using English, the common language of the whole world, for issues that concern all people is important both in terms of language development and awareness raising. For example, slogans can be written about environmental awareness"*. Those who stated that integration can be made with social science courses and English gave geography as an example (n=6). To exemplify, PELT 5 stated, "*Yes, for example, geography topics can be explained in a lightened way in English class. In this way,*

both lessons can be connected, and landforms and natural phenomena can also be learned in English. It can be explained without going into very technical details".

In addition to emphasizing numerical and verbal subjects, prospective English teachers also state that this association can be in subjects related to daily life. They state that associations can be made, which is more likely to happen in science and mathematics. According to these participants, the language level of the students is the most important criterion for making these integrations, and that fundamental concepts and simplified topics can be used to integrate English and other courses.

3.1.2. Prospective Social Studies teachers' views on the integration of different courses

When prospective social studies teachers' written reflections before the implementation were analyzed, the following results were found:

Table 2. Prospective social studies teachers' views on integration before the implementation

Questions	Sample extracts	Frequency
Can Social Studies be integrated with other courses?		n
Yes	Everything related to life can be integrated with social studies	6
	Skills in social studies and skills in other courses	3
	Kemalism Subjects	1
Which courses can be integrated with Social Studies?		
	Turkish course	7
	Science and Mathematics	2
	Citizenship skills	1

It is clear from their statement that social studies are more likely to be related to science and Turkish courses, which is feasible, especially when taking a Turkish course. For instance, reading passages from a Turkish course may be relevant to the subjects covered in the social studies course. Prospective teacher PSST 7 stated, "*Our usage of oral and written materials in social studies instruction is already covered in a course we are taking, so Turkish is also used in that context*."

Due to the similarities in the subject matter, some prospective teachers believe it might be connected to science courses. PSST 3, asserts that "*Natural occurrences or environmental issues might be related to one another in science. Even mathematical calculations can be used to illustrate Turkey's position, parallels, and meridians. There was not even one example related to the English lesson in the discourse of pre-service social studies teachers"*.

Then, prospective English teachers were asked whether social studies and English lessons could be related. When the answers were examined, it was seen that all but two pre-service teachers stated that this was possible because English is a universal language. The pre-service teachers who stated that this could not be done stated that "*if the level of the students is not appropriate, they cannot understand the subject matter either in Turkish or in English*".

Most of the prospective social studies teachers (n= 8) stated that this was not possible because they could not make the association with English in the lessons since they did not speak English themselves. They stated that English is complex, and this would cause students to be afraid. Again, it is understood that they decided based on their own English experiences. "*We do not have English. How can we explain the lesson in English? We don't understand it ourselves*". These prospective teachers' statements reveal our country's widespread fear of English. Two prospective teachers suggested this could be possible, especially when explaining global problems and weather. For example, the English equivalents of natural phenomena such as earthquakes, floods, and landslides can also be taught like the English equivalents of such concepts.

When prospective English teachers' discourses are analyzed, it is understood that pre-service English teachers think more flexibly on this issue and are more open to integrating social studies and English. It is understood that pre-service teachers' own learning experiences affect their views on integrating different courses.

3.2. Creation of CLIL Lesson Plans

English language teacher candidates were told what CLIL is, how it is implemented, and how the 4C framework can be applied when making lesson plans in this field in 3 lesson hours.
Afterward, one of the researchers, a researcher from the Social Studies Department, and her four students visited the ELT department third graders' class and gave information about the social studies program structure, objectives, content, methods, and techniques. In this process, they were first asked how they remembered themselves learning social studies in secondary school and asked to share their learning experiences. The prospective English teachers were asked what they remembered about social studies and gave examples of using it in English. Then they were informed about the program used today, the philosophy of the program, and the like. The researchers explained why interdisciplinary studies are essential, gave information about the work, and showed a sample integration activity.
Prospective English teachers approached the project very positively. They gave examples of topics that they could do themselves. PELT 19 said that an activity could be done on being a good citizen while teaching the "should" pattern. They said that a study about countries could be done. It is explained that they need to plan an English lesson integrated into social studies, which should at least have one objective.

After forming the groups, the researchers told them they should meet within that week and start preparing the plan by choosing their topics and taking photos during their meetings. In addition to the plan, the researchers asked for materials and reports of their meetings. The groups were formed, they met, and the prospective social studies teachers participated in selecting outcomes and creating content. Then the prospective English teachers prepared their plans, developed their materials, and presented them in their classrooms.

3.2.1. Lesson plans

While preparing a lesson plan in English, communicative and inductive ways of learning are prioritized. Four fundamental skills, listening, speaking, reading, and writing, are aimed to be used in the integration. The participants analyzed both curricula and found which skills or main activities in English can be combined with which topic in the social studies program.

Table 3. Lesson plans with 4C framework

Group	Theme	Enriching English language teaching	Skills	Relating to the culture
1	Science, Technology, and Society	Giving simple instructions, making simple inquiries about technology Developing ideas for designing unique products based on the needs of their environment.	Researching the inventors of the technological products, the usage, and development of these products over time	Grouping the technological devices in their environment according to their usage, e.g., cleaning during pandemics in their houses.
2	Science, Technology, and Society	Writing a short and straightforward report about past events.	Specific information about names and dates in the past events, e.g., timetable, who am I? game.	"Who am I?" game about Turkish Islamic scholars who contributed to the civilization's scientific development process

3	Nationality, Countries	Developing interest and positive attitudes towards different nations. Students will recall what they have learned in social studies about the countries and practice that information in English.	Map-based game to enhance their spatial perception skills.	Finding on the map game: Ahmet is from Turkey. Turkey is in Europe and Asia and is famous for Cappadocia. The capital of Turkey is Ankara.
4	Crops grown in our country Production Consumption Distribution	Talking about the political map of Turkey Knowing some specific countries and their region Knowing the city's indigenous features Tabuu game	Talking about the political map of Turkey, cities' indigenous properties. Trabzon: anchovy, Black Sea, Sumela Monastery. İzmir; Gevrek, Clock Tower Tabuu game about all these	We live in Turkey, but not all of us are informed about our country. Before starting, where is your hometown? The introduction and cultural features of the cities and playing taboo to learn and memorize the cities' features.
5	Seasons and weather	Talking about their likes and dislikes Describing weather conditions Naming the seasons, and asking and answering simple questions about weather conditions and clothing. Listening activity	Observation and empathy skills	How is the weather? Students analyze the weather forecast of their city (Cities of Turkey and their weather) Reading and matching picture activities-Clock
6	Countries and Nationalities Global connections	Asking clarification questions about the countries and flags and ensuring each student understands the subject, vocabulary, and grammar.	Recognition of different countries around the world. Character creation activity. They give characteristics and ask the students to find the child's name: flags and country matching. Hot-seating drama technique could have been used.	The students respect other cultures.
7	People, places, environment. The students know about the location.	Using a compass and learning directions, the teacher brings a compass to the classroom and asks if they have ever used a compass before and, if they have, whether they know the meaning of the letters on a compass.	Sketch preparation. Directions Locating in the sketch Bringing a compass to class	Drawing sketches of their neighborhood. Telling the locations of their county's cities on a map Finding the location of the places they visit daily
8	Individual and society Recognizes individual interests and needs	Delivering a simple brief speech about abilities with an initial presentation. The teacher greets the students, converses about sports activities, and asks what they like or dislike.	The activities are; asking what they like and dislike, drawing activities, creating their character, and describing their abilities in a short paragraph	Saying three truths and one lie about oneself while the class tries to guess the lie.
9	Value education Disasters and emergencies	Review vocabulary related to weather and natural disasters Increase awareness and teaching possible measures in disaster and emergencies Listening, speaking, reading, writing activities, drawing	Concept caricature, moral reasoning, value education They have also written a drama activity.	Making the necessary preparations against natural disasters. The disasters and forces that are more likely to occur in the students' life zone and prioritized

10	Nationality and countries	Talking about nationalities and countries, asking and answering questions about nationalities and countries, constructing simple dialogues and nationality, improving their logical thinking	Flag matching about different nationalities and countries Puppets	Creating characters from different nationalities, starting from Turkey: Turkey is famous for lots of things such as cuisine, touristic places, historical building, and places.

Two lesson plans were prepared for science, technology, and society, two in the learning area of people, places, and environments, one for production-consumption distribution, two for global connections, and one for individuals and society.

3.2.1.1. Themes

Regarding grade, four lesson plans were prepared in line with the 4th, two in line with the 5th, two in line with the 6th, and two in line with the 7th-grade objectives. Three groups chose science, technology, and society out of ten; people, places, and environments by three; production, consumption, and distribution by one; global relations by two; and individual and society by one group. When the themes were determined, it was understood that they made their decisions based chiefly on course objectives. They examined both programs and focused on shared outcomes and grades. In focus group interviews, the 3rd group stated the following:

PELT: …. we generally communicated via WhatsApp, which was one of the most important benefits of technology.
Researcher (R): Indeed, it must have been good at both document submission
PELT: Exactly, they sent the program, and we examined it, and …. went and met them. We took a closer look at both programs and compared them a little bit, most of the things did not fit according to the objectives or classes, and finally, we decided on the subject of countries and nationalities. For example, something we have in 4^{th},5^{th}, or 6^{th} grade is in a different arrangement here. It can be at different levels, so we had a little trouble here; for example, we have it in 4^{th} grade, and they have it in 6^{th} or 7^{th} grade. It is always necessary to pay attention to these. This constitutes an excellent example of increasing program knowledge. Outcome 4 in our English program says something very general; it says that they understand and talk about what is said about countries and nationalities. You know, there is nothing explicit. There was nothing about social studies. We added a few social studies elements, elementary things, such as the capital city, which continent it is on, its flag, and what it is famous for.

The above extract shows that the pre-service teachers carefully examined both their program and the program of the other group, which is a significant result.

When these themes were considered, it is understood that they chose topics that may be more closely related to daily life or students' lives, such as science, technology, and society and topics related to geographies, such as people, places, and environments. We observe that they did not choose active citizenship topics; at the beginning, they said mostly geography, but technology is also involved now.

3.2.1.2 Enriching English language teaching

As for different ways of teaching English, prospective teachers stated that they tried to write more fun activities. They used games, puppets, creative drama activities, and the like. In addition, they were more interested in teaching English grammar than speaking skills and thought this was even more important.

Group 9 Review vocabulary related to weather and natural disasters. Increasing awareness and teaching possible measures in disaster and emergencies: Listening, speaking, reading, writing activities, and drawing
Group 8 Greeting students and having conversations about sports activities, asking what they like and dislike
Group 2 Writing a short and straightforward report about past events.
Group 4 Talking about the political map of Turkey, knowing some specific countries and their region, knowing the city's indigenous features, taboo game

These examples indicate that it is very important for students to use games (n=4), puppets (n=1) moral reasoning, (value education) process planning (n=1) developing activities related not only to grammar but also to reading, writing, listening, and most importantly; speaking and communication skills in English. The materials they use for these activities are also essential and remarkable. Here is an example of group 3's game activity's instructions:

The teacher divides the class into groups of three. There is a box full of folded papers. He asks each group to pick three papers from the box. Then, he writes and explains the instructions about the game. Instructions can be:
Unfold your papers. (You will see the names of three countries and three persons)
Try to find the countries on the map.
Talk to your friends and answer the questions below. Each correct answer is one point. You have 5 minutes.

In focus group interviews, Group 9 stated that they tended to choose activities where students can learn English in a fun way.

They (social studies prospective teachers) talked about the activities they had prepared in their lessons and the topics in their lesson plans; we saw how they could be applied. We quickly decided and created a drama activity with them. The drama activity was fun for the students. Thus, they could speak more easily.

The interview with group 6 below shows us that pre-service teachers find the integration challenging but at the same time promising:

After conducting this research, we, as students from two different fields, agreed that it is possible to integrate two lessons and came up with an integrated lesson plan. It was challenging for us to find overlapping topics and contents suitable for the objectives and goals of these two lessons, and it was time-consuming for us. Even though it was time-consuming and compelling, we agreed that it is possible to integrate the objectives and goals of these two lessons by integrating contents and topics. In the end, after all the effort we put in, it is worth integrating these two lessons.

3.2.1.3. Skills

Prospective teachers wrote activities that could improve English reading, writing, listening, and speaking skills. They also wrote activities to develop skills specific to social studies teaching, such as perception of time, change and sustainability, perception of space, historical empathy, and empathy. One group wrote a moral reasoning activity related to value teaching and stated that they tried to develop logical thinking. There is a timeline and game related to historical empathy in group 3's plan below.

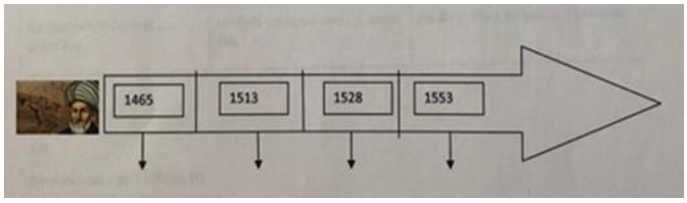

Figure 1: Timeline of Islamic scholars

Figure 2: "Who Am I?" Hat of group 3

3.2.1.4. Relating to culture

The most important thing about the 4C framework is that it focuses on culture, both their own culture and recognizing that there are different cultures and lives in the world and respecting them. The fact that the social studies course had these topics in our study made the work easier because, in previous studies, it was seen that they had the most difficulty in this. The focus group interview of group 3 indicates this situation:

When they were explaining the topics, they always had examples from their own lives and places in social studies. Therefore, we did not have any difficulty in this part. It was enough for us to write activities on the program's objectives.

By associating almost every topic with the place they live or with examples from life, they have developed activities that will help students recognize their own culture and respect different cultures. In weather events from where they live ... in the sketch, they use folk songs from their hometowns, and the like.

3.3. Prospective English Language and Social Studies Teachers' Process Evaluation

This section will present firstly prospective English Language teachers' process evaluation and secondly, prospective social studies teachers' process evaluation**.**

3.3.1. Process evaluation of prospective English language teachers

When we asked them to write both the positive and negative aspects, the prospective English teachers focused on the positive aspects rather than the negative.

Table 4. Process evaluation of prospective English language teachers

Questions	Sample extracts	Frequency
Positive	Can facilitate student learning	15
	Information becomes more permanent/increased repetition	6
	Can increase students' interest	4
	Having fun activities	3
	I don't think there will be any downside	2
Negative	Time-consuming	19
	Difficult for a student who dislikes one of the two subjects	4
	Not every topic may be suitable	2
	Students may be confused	1

Two prospective teachers even stated that there would not be any negative side to it. Fifteen prospective teachers stated that this process would thicken students' learning. Prospective English

teachers who find integration positive state that it can facilitate student learning (n=15), information becomes more permanent/increased repetition (n=6), can increase students' interest (n=4), having fun activities (n=3) and I don't think there will be any downside (n=2).

PELT 1 emphasized the positive state of this integration. It would be appropriate to integrate the social studies course in secondary school, which is a course that provides students with basic information from life, with language, which is also a cross-section of life. For example, it allows students to explain themselves and get to know themselves for the topic of "Who am I?" which is a topic in the social studies course that can help students explain themselves. PELT 21 also stated the fun of integration:

It can also be fun for the students. For them, there will be a familiarity with them, and they will feel more confident, but the downside may be for the teachers. It can be challenging to go through both curricula and integrate them into the lesson. Or maybe students might be confused when they see these topics in English.

PELT 23 emphasized students' interest and permanent/increased repetition *"Knowledge becomes more permanent with the integration of courses. Effective learning takes place because social studies topics are more related to real life".*

PELT 17 and 18 also emphasized the student learning process:

Students will start to see English not only as a lesson but also as a means of communication. Teaching the topics and adapting the class's language level to the social studies course will be challenging. However, despite all the difficulties, it will be advantageous when these two courses are linked because it will be possible to repeat the topics and the short English lesson hours will be increased. Therefore, English will be transformed from being seen only as a lesson into a means of communication (PELT 17).

It increases students' interest in both subjects and provides opportunities for repetition. Subjects that students can relate to their own lives make English lessons more understandable. On the negative side, if a student is weaker in one of the two subjects, this can negatively affect the other subject. If the activities are not chosen correctly, the student may lose interest. It can be a waste of time for the teacher. However, it is a working student can benefit from (PELT 18).

PELT 27, 28 and 20 mention social studies course as suitable for integration because of its topics:

Topics such as natural disasters, professions, local and international cultures, flags, weather events, and the like can be associated with English. Social studies course's objectives that aim to develop students as individuals and give them responsibility can be integrated into most activities in English education (PELT 27).

The most suitable course is social studies because the content and achievements were very suitable for English. Countries, cities of our country, our economic resources, savings, landforms, natural disasters, food sources... There won't be any negative side to integration (PELT 28).

Imagine if we used it in mathematics; for example, it could cause students to give up hope in a subject they are already struggling with. World cultures, which are among the subjects of the social studies course, would be more effective and useful if we used English, which has become the world language.

The downside is that students who dislike one of the subjects may lose interest in the other subject. (PELT20)

Two prospective teachers even stated that there wouldn't be any negative side to it. Prospective English teachers who find integration negative state that it can be time-consuming (n=19), difficult for a student who dislikes one of the two subjects (n=4), not every topic be suitable (n=2), and students may be confused (n=1). PELT 19 coded prospective teacher mentioned that:

The negative side is that it will take more time than usual for the teacher to get ready for the lesson and prepare a lesson plan.

PELT 11 coded prospective teacher emphasized the nature of the challenging of English on the negative side: *"Teaching topics that require excessive memorization and knowledge in English can be challenging for students".* PELT 16 also mentioned one of the negative aspects as "*the student may be confused after the integrated course and unable to reach the outcomes of both courses sufficiently".*

3.3.2. Process evaluation of prospective social studies teachers

When we asked them to write both the positive and negative aspects, the prospective social studies teachers focused on the negative aspects rather than the positive.

Table 4. Process evaluation of prospective social studies teachers

Questions	Sample extracts	Frequency
Positive	Can facilitate student learning	7
	Information becomes more permanent/increased repetition	2
	Can increase students' interest	1
Negative	Time-consuming	5
	Difficult for a student who dislikes one of the two subjects	1
	Not every topic may be suitable	1
	Students may be confused	1
	Teachers may not feel competent	1
	It makes it difficult to learn social studies	1

For social studies prospective teachers, the positive side of this process is facilitating student learning (n=7). PSST 7 stated that "*It facilitates students' learning, it allows them to repeat*" and PSST 3 noted that "*the information becomes more permanent than ever. They can repeat what they have learned in the social studies course in English course, which allows them to revise the subjects."*

When we asked them to write both positive and negative aspects, it was understood that they exemplified the negative aspects more. The fact that they expressed more negative aspects than positive ones can indicate that their own negative experiences of learning English are more important than everything else. Among those who think negatively, PSST7 argued that "*Subjects can get intertwined with each other. They can speak in English in social studies class".*

4. DISCUSSION and CONCLUSION

This study aims to examine how aspiring English and social studies teachers create interdisciplinary lesson plans by working collaboratively and utilizing the Content-based language instruction methodology (CLIL). Discussion of the findings will be analyzed under three headings; interdisciplinary perspective development, interdisciplinary planning process, and the 4C framework,

challenges, and opportunities of interdisciplinary studies. Lastly, some possible suggestions will be provided.

4.1. Interdisciplinary Perspective Development

Without giving information about the content of the project, English and social studies teachers indicated that the integration of courses was plausible. All participants stated that this idea was possible. They provided three key justifications for their opinions. These are "English is a world language," "English is present in all aspects of life," and "Associations can be created depending on the level of the pupils". Prospective English teachers think that associations can be made primarily on mathematics, science, and daily life subjects. On the other hand, prospective social studies teachers assume that social studies course is more likely to be related to science and Turkish courses. This idea is feasible, especially when taking a Turkish course.

Before starting the study, when the participants were asked questions such as "Can there be an interdisciplinary study? How?" it was found that all participants were optimistic about integrating different courses. Specifically, they stated that this would make it easier for students to learn because they could repeat what they had learned in one lesson and other lessons. For prospective English teachers, in particular, this was feeding two birds with one scone because students would be more exposed to English. This finding is in parallel with the results of Çulha Özbaş and Güryay's (2014) study which indicated the majority of prospective English teachers were motivated to integrate social studies and English via global education.

When asked about the integration of social studies and English, it was seen that while English teachers were positive about this, social studies teachers were not so optimistic. When asked about the reason for this, it was understood that their learning experiences were compelling. Socialists draw an analogy between their language learning process and their students' language learning process and say that integration will be complex.

The *"We do not have English"* view demonstrates that prospective teachers' views about their courses impact their collaborative thinking processes. Prospective English language teachers seem more willing to work together and relate English to other subjects or consider themselves competent in this regard. Again, the fact that some of their courses were conducted in English while they were learning English affects this. While learning English, they also learned the English names of the concepts and events in science and mathematics courses. It is concluded that how prospective teachers learn disciplines during their student years influences thir beliefs about how to teach a subject better during their pre-service teacher education.

4.2. Interdisciplinary Planning Process and 4C Framework

The 4C framework consists of 4 domains: content (themes), English communication competencies, skills cognition, and cultural associations. In previous studies, it is understood that prospective teachers are fine with creating themes in the lesson plans they prepare. However, they have difficulties when they do not consider themselves competent in the lesson plan subject. In this study, this problem was not encountered. The fact that two groups of prospective teachers from two different disciplines worked together prevented them from worrying about questions; "Is the information correct?" "Am I transferring the discipline correctly?". In this process, each teacher group had the opportunity to examine the program of their branch in more detail; they made common progress on similarities and differences. They felt comfortable with the 4Cs and thought it would work. Turner (2021) favors the benefits of the 4Cs framework as it is compatible with student-centered and inquiry-based approaches. The structure of the program was also influential in this. Referring to the previous study with the English speakers, they said they did not think about whether they were

doing it right or wrong. Besides, prospective teachers indicated that they supported each other in preparing the material.

In previous studies, it was seen that prospective teachers prepared CLIL lesson plans in the areas they were interested. In a CLIL study, they chose science, technology, society, people, places, and environments. Leung (2015) reaches a similar conclusion, pointing out that English language teachers often choose the topics for their CLIL lesson plans based on how well they are familiar with the material. In light of this, multidisciplinary studies for teacher education can be recommended. It is observed that prospective teachers in this study mainly used online methods for these data collection procedures. This result supports the notion that collaboration and mutual support between CLIL teachers and materials designers, including exchanging experiences, resources, and best practices, are crucial (Bannegas, 2016; Coşkun, 2022; Coyle et al., 2010; DelliCarpini, 2021).

In earlier research, finding suitable materials, investing time, and integrating culture into the lesson plan were challenges. Finding appropriate materials, spending time, and adding culture to the lesson plan are some difficulties participants reported while preparing CLIL lessons. Similarly to this, it is said that the process of developing materials and planning CLIL lessons can occasionally be difficult and time-consuming (Bannegas, 2016; Gierlinger, 2007; Moore & Lorenzo, 2007).

4.3. Challenges and Opportunities of Interdisciplinary Studies

Prospective teachers perceived integrating social studies into English language arts (ELA) as an opportunity for growth, not only in learning concepts of both skills but also for general skills and transferring knowledge. This belief is because they think that students will repeat what they have learned in one lesson in the other lessons, and thus permanent learning will occur.

Furthermore, curriculum integration has proven to be effective in developing and transforming the students' behaviors towards subject areas; students become excited about integrated lessons, and they state that this process can be made fun, especially with drama activities, puppets, and games.

One of the main challenges of integrating social studies into the ELA curriculum was inadequate time to plan and incorporate the needed lessons and concepts into the main subject. The gathering of students from two different departments was one of the difficulties of this study. Since they had difficulties finding a shared time to meet, they usually preferred to convene online. The most challenging part of the study was that prospective social studies teachers felt that their foreign language skills were insufficient. Haciemiroglu (2014) puts forward that merging two topics also entails more work for teachers who are already overworked and responsible for other duties; time management challenges for teachers are thus compounded when attempting to integrate curricula. Additionally, teachers note that a lack of tools and materials makes planning and integration even more complicated (Haciemiroglu, 2014).

The current study discovered that the integration should result in the application of and connection between social studies concepts and the student’s real-life experiences. Besides, it is seen that prospective teachers mainly chose topics from daily life such as science, technology, society and people, places, and environments. Moreover, some prospective teachers emphasize that integrating different courses is time-consuming for the teacher, while it can be time-saving for the students. This finding is in parallel with some other research findings. According to other studies, developing CLIL lesson plans and related resources can occasionally be difficult and time-consuming (Bannegas, 2016; Gierlinger, 2007; Moore & Lorenzo, 2007). It was understood that pre-service teachers' own learning experiences affect their beliefs about their teaching experiences.

As a result of this study, it was understood that the 4C model, which can be used in CLIL, might be suitable for social studies and English integration. It is also an important result that prospective social studies teachers consider themselves inadequate in their knowledge of English and claim that neither they nor their students can achieve it. In terms of the integration of social studies and English,

while prospective English teachers were positive about it, social studies teachers were comparatively negative. In line with these results, suggestions were made for future studies.

4.4. Suggestions

Further research can focus on both students' and teachers' perceptions of CLIL after the implementation of the CLIL lesson plans and materials in the classroom setting because the teacher perceptions in this study are based on language-driven CLIL lesson plans and materials that were regrettably not implemented in the classroom due to time constraints. The English language teachers may have more in-depth perceptions if given a chance to witness pupils being exposed to a CLIL practice. Future studies should also examine how the CLIL lesson planning process affects future EFL teachers.

Courses in which prospective teachers can work in an interdisciplinary way together during the education process can be suggested. It has been concluded that the 4C framework is a good model in core practice training, especially in a subject such as social studies, because it can be associated with culture. Therefore, in future studies, sample activities can be planned in different branches.

In this study, only the plan preparation process was evaluated. Therefore, in future studies, research on the implementation and implementation processes of the prepared plans can be conducted. The present study also demonstrated that pre-service teachers' awareness (curriculum knowledge) of their own and other branches increased while working together. In future studies, the effect of interdisciplinary studies on the development of pre-service teachers' pedagogical content knowledge can be evaluated.

Given the advantages of the CLIL lesson planning process on the development of English language teachers in various fields, it is claimed that CLIL is an effective tool for pre-service teacher education programs. In CLIL lesson planning, teachers had the most difficulty in doing activities that would connect with culture; however, in this study, no one mentioned this because the basis of the social studies course is culture. This might be due to the perception that English lessons in Turkey are generally taught only to teach a different culture. Different planning methods in teacher education can also be compared and discussed with prospective teachers. Is it feeding two birds with one scone, or does it bring burden and confuse both the teachers and students can be investigated.

Ethics Committee Decision

This research was carried out with the permission of Dokuz Eylül University Social and Human Scientific Research and Publication Ethics Committee with the decision numbered E10042736-659-413916/882 dated 02.11.2022.

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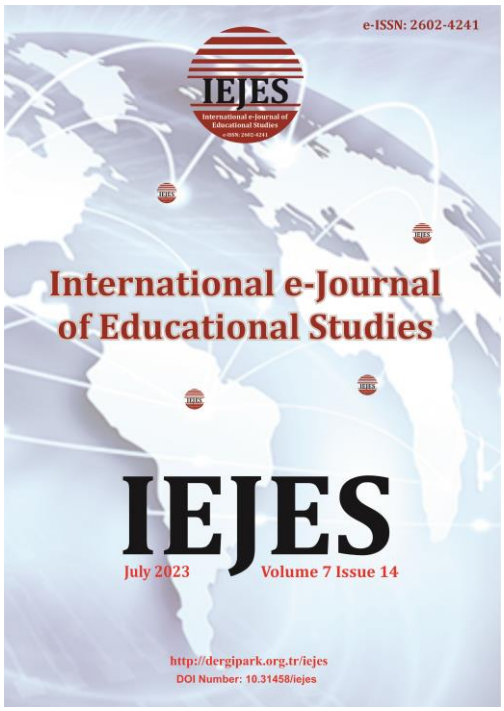

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Article Name	Identity (Re)construction of Turkish pre-service language teachers during the practicum

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Conceptualization, literature review, methodology, implementation, data analysis, translation, and writing

Abstract

Teacher identity has been prioritized in current research related to teacher education in order to understand teaching and learning context. This case study investigates identity (re)construction of three pre-service English teachers during the practicum. Drawing on sociocultural theory, how pre-service teachers constructed their identities and enacted their agencies in the field school was examined based on the narratives of the participants. Data collection tools included reflective papers and semi-structured interviews with the participants. Analysis of the qualitative data revealed the following themes related to identity formation of pre-service teachers during the practicum: their imagined selves (Wenger, 1998), the practicum as shaping their identity, and directions for future selves as a result of practicum experience. It was found that previous experiences of the participants as language learners and interaction with the parties including mentor teacher and students in the field school had both positive and negative impacts on identity formation of pre-service teachers. Findings of the study is expected to contribute to the relevant literature, and suggestions are presented for further studies.

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Research Article

Identity (Re)Construction of Turkish Pre-service Language Teachers during the Practicum*

Fatma KAYA [1]

Abstract

Teacher identity has been prioritized in current research related to teacher education in order to understand teaching and learning context. This case study investigates identity (re)construction of three pre-service English teachers during the practicum. Drawing on sociocultural theory, how pre-service teachers constructed their identities and enacted their agencies in the field school was examined based on the narratives of the participants. Data collection tools included reflective papers and semi-structured interviews with the participants. Analysis of the qualitative data revealed the following themes related to identity formation of pre-service teachers during the practicum: their imagined selves (Wenger, 1998), the practicum as shaping their identity, and directions for future selves as a result of practicum experience. It was found that previous experiences of the participants as language learners and interaction with the parties including mentor teacher and students in the field school had both positive and negative impacts on identity formation of pre-service teachers. Findings of the study is expected to contribute to the relevant literature, and suggestions are presented for further studies.

Keywords: ELT (English Language Teaching), teacher identity, language teacher education programme, the practicum

1. INTRODUCTION

Teacher identity refers to teachers' considerations about themselves with regard to their personalities and reflection of their personalities on their teaching processes (Buchanan, 2015; Bukor, 2015; Varghese, Morgan, Johnston & Johnson, 2005). The relevant field emphasizes that pre-service teachers' previous experiences and their perceptions with regard to teaching and learning have an effect on their identity formation (Edwards & Edwards, 2017). It is possible to see different frameworks related to teacher identity; however, the emphasis on how identity is constructed with regard to contextualized social process has gained much ground in the relevant field (Miller, 2009). It is dynamic; changing and evolving depending on the social context (İbid, 2009).

Pre-service teacher education programs and the professional experience at the school have a crucial role in shaping pre-service teachers' identities (Izadinia, 2013; Rodrigues, Pietri, Sanchez & Kuchah, 2018). Among these, teaching practicum plays a vital role for pre-service teachers since it does not only provide pre-service teachers with the opportunity to see how far it is possible to teach based on the training they received but also provides them with a context where teacher identity is shaped and reshaped (Trent, 2010). It is possible to see various definitions to elaborate on teacher identity. This study followed Norton's (2013, p.45) definition of identity described as: "how a person understands his or her relationship to the world, how that relationship is structured across time and space, and how the person understands possibilities for the future." Although a good number of studies

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were conducted in order to identify how pre-service or in-service language teachers construct their identities during their training or professional life in various contexts, a limited number of studies with regard to language teacher identity were carried out in Turkish context to the researcher's knowledge (Erdem, 2020; Keskin & Zaimoğlu, 2021; Tokoz-Goktepe &Kunt, 2021). Considering the importance of the issue of teacher identity as figuring out teacher identity means elucidating how students learn and how teachers teach (Varghese et al., 2005), this study aims to reveal how three pre-service English teachers with different motives constructed their identities during teaching practicum relying on their narratives as "they are important to attend to because they reveal sites of tension rooted in the personal, experiential and concrete". (Rodriguez & Polat, 2012, p.364), through attempting to answer the following research question:

- How does the practicum shape the identity development of pre-service teachers?

1.1. Theoretical Framework

1.1.1. Teacher Identity: Sociocultural Approach

As stated above, teacher identity has gained great attention from the researchers in the last few decades (Prabjandee, 2019; Rodrigues et al., 2018; Ruohotie-Lyhty, 2013; Trent, 2013; Yuan & Lee, 2015). Furthermore, some studies focused on the relationship between teacher identity and agency, emotions, and teachers as researchers (Edwards & Burns, 2016; Wolff & De Costa, 2017; Taylor, 2017; Yuan & Lee, 2016). Sociocultural approach has been among the basic frameworks for majority of the studies related to teacher identity (Martinez-de-la-Hidalga & Villardon-Gallego, 2019). Sociocultural approach has prioritized that teachers are in fact learners, learning how to teach and language teacher identity formation is at the heart of this learning period (Sang, 2020). During this learning process, teachers' behaviors and actions are formed and undergo continuous changes through contact with many factors including teacher-learner, learner-learner interactions, cultural dimensions of the training they received, and the uniqueness of the classes they are teaching (Johnson & Golombek, 2020). The identity development or change does not only happen during the teacher education program; it tends to alter during the teaching carrier since continuous contact with school and outer community has a potential influence on teacher identity (Beauchamp & Thomas, 2009). According to Norton (2006), it is difficult to discriminate between social and cultural identities as they develop in relation to each other; therefore, she suggests that social practices including experiences in one's house, learning and teaching environment, and cultural practices including experiences with a specific community have a mutual role in the formation of sociocultural practices. In this study, socio-cultural theory was adopted to understand and search teacher identity which was conceptualized as a dynamic process likely to evolve depending on many factors such as time, place, and interactions with other stakeholders (İbid, 2006).

Teacher identity includes both personal and professional identity, which emphasizes identity formation with regard to professional development of the teacher (Beauchamp & Thomas, 2009). The role of self-identity in professional identity formation should not be underestimated because teachers' beliefs and practices which they call as ideal may contradict with the imposed educational practices which tend to change through the time.

Adopting and enacting professional identity is a challenging process on the part of the teachers and pre-service teachers since it requires keen participation including great effort and hard work for teacher and teacher candidates to assume a specific professional identity (Prabjandee, 2019). Professional identity is closely related to agency in that adopting a professional identity requires teacher agency (Prabjandee, 2019; Yuan & Lee, 2016). According to Priestley, Edwards, Priestley & Miller (2012, p.197) "agency can be understood in an ecological way, that is, strongly connected to the contextual conditions within which it is achieved and not as merely a capacity or possession of the individual. Agency is achieved in particular (transactional) situations."

1.1.2. Narrative Inquiry

Although researchers agree that teacher identity is difficult to explain as many factors are at play including teacher's actions, interactions, beliefs in the formation and evolvement of teacher identity, they go on presenting elaborated descriptions related to the issue. The need for simplified and clear descriptions still exists. Narrative approach to understanding teacher identity is reasonable since it applies to long-term and contextual nature of identity development (Edwards & Edwards, 2017). Identity formation and reformation occur through narratives of teachers and pre-service teachers (Yuan & Lee, 2016). According to Sfard and Prusak (2005, p.14), identity refers to "a set of reifying, significant, endorsable stories about a person. These stories, even if individually told, are products of a collective storytelling." Teachers have a chance to reflect on and recognize their actions and beliefs as individuals thorough narratives of themselves and the discourse they are involved in (Beauchamp & Thomas, 2009). The close link between the self and the society makes it essential for the teachers to assign new understandings to their stories (Ruohotie-Lyhty, 2013). Teacher agency has also a crucial role in making sense of the experiences and the stories generated relying on the experiences (Ruohotie-Lyhty, 2013). These stories "are not only chosen and managed by their tellers alone, but are also expressions of cultural values, norms, and structures passed on by the tellers" (Beijaard, Meijer & Verloop, 2004, p.123). While narratives based on the experiences help the construction of teacher identity, stories based on their prior experiences help them make sense of the current educational context they are exposed to (Ruohotie-Lyhty, 2013).

2. METHOD

Case study design was chosen for the study in order to reach to a detailed understanding related to how pre-service teachers constructed their identity, and whether/how they enacted their agency during the practicum (Creswell, 2012; Duff, 2014).

2.1. Context and Participants

This study was conducted at a public university in Turkey where becoming a teacher requires earning a four-year bachelor degree provided by any faculty of education. In order to graduate, candidates are obliged to attend teaching practicum during the last year of the teacher training programme. During the practicum, pre-service teachers are expected to observe mentor teacher, prepare lesson plan and teach in addition to completing related assignments asked by the supervisor from the faculty. Teaching practicum lasts for 12 weeks for each semester.

The participants of the study included 3 pre-service teachers (cases) attending an ELT (English Language Teaching) department at a state university located in the eastern part of Turkey. The participants were selected by convenience sampling. The pre-service teachers who completed the assignments by the supervisors and attended the meetings with the supervisor regularly took part in the study. The study was conducted during when the participants, Bahar, Esra and Hülya (they are pseudonyms) attended 12-week teaching practicum in the last year of their training process. The first participant Bahar is a pre-service teacher who is enthusiastic to teach English. She is a successful pre-service teacher appreciated by the academics in the department because of her academic success, and actively took part in several activities and workshops related to professional development of language teachers. The second participant Esra has also enthusiasm for teaching English as she likes English. The third participant Hülya does not want to be an English teacher; she was planning to attend a translation program in a renowned university. However, she had to attend English Language Teaching department because of her university exam score as her score was below the required score for the translation programme in one of the top universities. This is not uncommon in Turkish context: not all the pre-service teachers attend teacher training programmes because they like teaching or want to teach. In fact, there are many other factors affecting students' preferences including university entrance score, job opportunities, preferences of the parents (Erdem, 2020).

The researcher was familiar with the participants as they attended two classes of the researcher when they were sophomores. Although ten pre-service teachers were invited to participate in the study and all of them volunteered to participate, the three participants introduced above were chosen for the study since they represent three different pre-service teacher profile; an enthusiastic, self-confident and motivated pre-service teacher (Bahar), an enthusiastic but diffident pre-service teacher who has concerns about her teaching (Esra), and a pre-service teacher who is not planning to be a teacher, but still wants to earn the bachelor degree (Hülya). She believes that she can realize her dreams easier when she gets her bachelor degree since it is a kind of certificate proving that she has a certain level of English, according to her.

2.2. Data Collection

As stated above, narratives of the pre-service teachers are likely to give us clear understanding of their identity formation. Therefore, reflection paper and semi-structured interviews which require the participants to elaborate on their answers based on their experiences and beliefs were chosen as data collection tools.

The study was conducted during when pre-service teachers participated in the teaching practicum which lasted for 12 weeks. The participants were asked to write reflective papers three times during the semester. It was in the form of prompted reflection: the participants were asked to reflect on their experiences during the practicum through answering several questions posed by the researcher. These questions were about what they learnt in the practicum, problems they encountered and perceptions related to their teaching. The questions were partly adapted from Yuan and Lee (2016), and they were directly related to participants' experiences during the practicum. The questions were revised based on the opinions of two colleagues. Meetings were arranged with the participants regularly (once in a week) in order to talk about their teaching practices and experiences in the field school, and the researcher took notes during these meetings. They were used as supplementary data. After the practicum (at the end of the semester), the participants were interviewed in order to learn about their educational background, their overall impression related to teaching practicum, to address issues related to their teaching, and to get more detailed answers related to the several issues which was mentioned in the reflective papers. Each interview lasted for approximately one hour, and the interview data was transcribed by the researcher. All these procedures were conducted in L1of the pre-service teachers (Turkish), and translated into English by the researcher. Ethical Approval was obtained from the Ethics Committee of the university where the study was conducted.

2.3. Data Analysis

In order to analyze the qualitative data, both the reflective papers and interview transcripts were carefully read by the researcher several times. During these recursive readings, codes were identified. The researcher traced identity formation of pre-service teachers when they interacted with the practicum school, mentor teacher and students in addition to the teacher education programme they attended as they all affect development of teacher identity according to sociocultural theory (Freedman & Appleman, 2008). Bearing in mind that teacher identity is a complicated issue entailing prior and current practices, exposures, interactions, reactions, and beliefs of pre-service teachers (Edwards & Edwards, 2017), this study aimed to identify how beliefs and practices of three pre-service teachers guided the development of their teacher identity through the narratives of the participants. Narrative method was chosen because it relies on a mutual making meaning in which the researcher and the participant are in meaningful interaction with each other (Hatsch & Wisniewski, 1995). Through the narratives of the participants, stories and emergent themes were combined in order to create a meaningful whole for each participant (Polkingthorne, 1996). The coding procedure including open and axial coding was adopted in the study (Saldana, 2009). The same procedure was applied for the narratives of each participant separately. As result of several readings of the qualitative data, initial codes were identified by the researcher (open coding). Prior experiences as language learners, rapport

with students, taking responsibility, confronting with the realities, exerting agency, satisfaction were among the codes identified by the researchers as shown in table 1. Then, categories were created thorough finding the connections between initial codes (axial coding). The following three categories were identified as a result of axial coding: their imagined selves (Wenger, 1998), the practicum as shaping their identity, and directions for future selves as a result of practicum experience. After analysis of each case, cross-case analysis (Merriam, 1998) was conducted in order to identify similarities and differences between the cases. In order to maintain the reliability of the analysis, an experienced colleague was asked to analyze the same data following the same procedure described above, and similar results were reported by her.

Table1: Coding table

Open Codes	Axial Codes
Prior experiences Teacher of Communicative Language Teaching Rapport with students An understanding and caring teacher Integration of culture into language teaching Balanced authority	Their imagined selves
Taking responsibility Practicum as a valuable experience Confronting with the realities Struggle for bridging the gap between realities and their expectations as future teachers Discrepancy between the teacher candidates and the mentors in terms of teaching philosophy Asymmetrical power relationship with the mentor teacher	The practicum as shaping their identity
Exerting agency Restriction to agency Being decisive about implementing her teaching philosophy	
Being concerned about her future self as a teacher Satisfaction Relief Believing that she could teach	Directions for future selves as a result of the practicum experience

3. FINDINGS

In this part of the study, narratives of three pre-service teachers will be reported case by case in order to describe in detail how these pre-service teachers constructed their identities during the practicum.

3.1.The First Participant (Bahar)

The first participant Bahar is an idealist and motivated pre-service teacher as she loves English and teaching English. She wants to be a good teacher and then, a good academician to help her prospective students to become successful English teachers. She is self-confident; therefore, she was delighted when she was given the chance to teach during the practicum as she mentioned in her first reflection paper:

> *"It is great to take the responsibility of a class because in this way I could see how far it is possible to transfer what I have learned during the undergraduate courses to the real classroom."*

She did not want mentor help and did not ask for it as she believed that she should learn how to cope with the possible problems by herself since she was given the control of the class. Her main

purpose as a pre-service teacher during the practicum was to help students develop a positive attitude towards English through adopting communicative language teaching methods. She wanted to achieve this through providing students with guidance and scaffolding since she had a very bad experience related to English learning:

> *"Our teachers used to humiliate us and they did not motivate us to learn English, which was a traumatic experience for me. Therefore, I think it is important to encourage students and build rapport with them. Only in this way, they can succeed."*

According to her, maintaining authority in the classroom was important to facilitate learning. On the other hand, she tried to empathize with her students since she had a similar background with the students. Moreover, she also learnt about the behaviors or attitudes she should avoid in her class through observing the mentor teacher:

> *"While observing the mentor teacher, I have noticed that questions like-do not you understand? or did not you understand? - affect students negatively. Therefore, I pay attention to using "I" statements in order not to discourage or hurt them."*

She had a good relationship with the mentor teacher, and therefore, there was no "asymmetrical power relationship" (He & Lin, 2013) between her and the mentor teacher, however; she did not approve her teaching styles and attitudes towards students. Therefore, she was happy that the mentor teacher did not intervene while she teaches. She adopted communicative approach in her class and had ample opportunities to integrate communicative activities and exert her agency. During the classes she realized that students were reluctant to participate in communicative activities since they were 8th grade students preparing for high school entrance exam and were not familiar with communicative activities as their English courses were exam-oriented in which they had question-answer sessions and she said:

> *"I was not disappointed by their reaction because I was expecting to encounter with such a resistance. Still, I will not give up and try my best."*

Low L2 proficiency level of students was another problem which urged her to use L1 from time to time. Even though L1 use conflicted with her imagined identity as a teacher of CLT (Communicative Language Teaching), it helped her realize that she had to tailor her teaching according to students' L2 proficiency level. The narratives of Bahar revealed that she was aware of problems in language classes as she had a similar English learning experience. In fact, her prior negative experiences had a role in shaping her initial teacher identity as a teacher of CLT and an understanding and caring teacher. Therefore, she was not frustrated and she wanted to see how far it was possible to apply modern language teaching methods in a real classroom environment as she stated at the beginning of the term.

In the subsequent weeks, after numerous attempts, she came to the conclusion that it was not impossible to integrate communicative activities into her class as she found out that students were getting used to and participate in the communicative activities. However, when she also attempted to use English culture as content in her classes as she thinks that teaching the target culture is a part of her job; she encountered a stricter resistance, which affected her identity as teacher of CLT negatively:

> *"Since they were not exposed to any class in which English culture was introduced so far, they did not welcome the activities I brought to the class which was related to thanksgiving and Christmas. They rejected to do the activities. They told me that they were Muslims, not Christians and did not celebrate such days. Therefore, they rejected to write a Christmas card."*

Even though, Bahar faced challenges related to integrating communicative activities and the target culture, she did not give up since she was expecting to face these problems. After students' negative reaction related to integration of target culture, she found a way through using popular culture in her class. She brought activities about Elon Musk and some famous singers to the class, and they

listened songs by the famous singers. She noticed that students loved it, which made her feel satisfied, and encouraged her in sticking to her teaching philosophy. During her attempts she understood that there was always a way to achieve her goals but she needed to be patient and prepare her students to the changes considering their needs, priorities, interests.

While trying to teach the language through modern methods, she was also aware of the importance of the affective dimension of language teaching. Therefore, she attached greater importance to student participation through scaffolding, and positive reactions of students contributed her identity as an understanding and caring teacher:

> *"I am decisive about using communicative activities in my classes. On the other hand, I do not want to discourage or offend my students. Therefore, I help and urge them during the activities, and provide them with constructive feedback related to their progress. I can see that it works. I have a student who stutters in my class. He used to sit at the back row and did not participate any of the activities in the previous weeks. However, he sits in the front row in my classes anymore and take part in the activities. He asks for feedback related to his performance in break hours, and I encourage him. It is amazing to see that he could speak English without stammering while he is stuttering when speaking Turkish. It shows us the great importance of teacher attitude towards the students."*

Despite the challenges and resistance, she encountered, she believed that she could be a good teacher and stick to her teaching. However, she had a concern related to her future career, which was likely to pose a threat her imagined identity:

> *"Students are accustomed to traditional methods and it is not easy to change. Furthermore, old and traditional teaching methods are adopted by the majority of the teachers and similar problems are everywhere. I am the minority. I am afraid of resembling them after some time. Since I will be working with other teachers sharing the same office, they can persuade me to be like them. This is what really concerns me about my future teaching career."*

3.2. The Second Participant (Esra)

Second participant is Esra. She is excited as she loves English and teaching English. However, she has concerns about her teaching and does not feel secure as she reflected in the first weeks of the practicum:

> *"I was worried whether I could teach when I first entered the class, but I did not encounter any problem during my first practicum day, and the mentor teacher did not intervene. This made me happy. I hope I will not face any problem in the coming weeks."*

Students' interest in English made her happy, and this motivated her to do her best during the practicum, which affected her identity development positively. However, she described herself as a decent and "smiling" teacher, and she thought that students would take advantage of it. Therefore, she had difficulty in managing the class from time to time. She had also difficulty in ensuring equal participation of the students, and large class size affected her imagined identity negatively:

> *"Students like the games and are very eager to take part in such activities; however, since the classes are very crowded, it is not possible for all the students to participate and those who could not have the opportunity to participate get frustrated and offended. I do not know how to overcome this problem."*

In the coming weeks, she realized that her being very tolerant towards students prevented her from managing the class effectively, which damaged her confidence. Upon observing and giving advises from her peers, she changed her attitudes towards students, she saw that it worked:

"There should be a balance between discipline and mercy: students like it when you show that you value them; however, they also want to learn and get feedback related to their performances. When I began to do these together and kept my distance at a certain level, I noticed that it became easier to manage the class and move on."

She felt upset when she saw that mentor teacher mainly used L1 in the classes, and used translation frequently. On the other hand, she was familiar with this kind of teaching as she was exposed to it when she was a student, and she was expecting to encounter this type of teaching. Therefore, she was not frustrated when she witnessed this traditional type of teaching like Bahar as she also stated that she was not disappointed when she saw that communicative and modern methods were not adopted in the school. In contrast to what she witnessed, Esra supported that there should be very limited L1 usage in the class, and communicative approach should be adopted. However, in the coming weeks, she realized that it was not easy to integrate communicative activities into her class, which hurt her confidence as a teacher of communicative language teaching:

"I knew that it would not be straightforward for the students to get used to communicative activities at once as they did not want to step out of their comfort zone, and very limited number of student participation proved this. In one of my classes, after the activity, one student came up to me and told me that she liked the activity; however, she could not participate as she could not speak English. That's why she was upset."

She described herself an understanding and patient teacher, and it was important for her to care for students' emotional well-being. Like Bahar, Esra also did not approve attitude of mentor teacher towards the students:

"I am trying to encourage the students to participate especially the ones who are introvert or inclusive students, I do not want them to fall behind. Seeing that they are treated cruelly by the other students really upsets me. Moreover, teacher attitude could be offensive. In one class, the mentor teacher told the students that they were embarrassing her because they could not answer the questions she asked. It was frustrating to see how discouraged the students became when they got such a reaction from the teacher."

Unlike Bahar's case, "asymmetrical power relationship" (He &Lin, 2013) was apparent in Esra's case. Her mentor teacher strictly supported to follow course book which mainly consisted of grammatical exercises and drills, and was not open to alternative options. Moreover, there were some unnecessary units in the coursebook according to the Esra and inclusion of the target culture was very limited:

"There was a unit about funfair vehicles, it was unnecessary for the students to learn names of the vehicles in a funfair according to me. Moreover, several weeks were allocated for the unit. I asked the mentor teacher whether I could introduce and use some activities in the class related to a special day in the target culture, the mentor teacher did not accept indicating that we had to follow the units (the curriculum) strictly and we did not have enough time for other activities."

Her objection related to the coursebook did not change anything and she had to follow coursebook while teaching, which restricted her agency, and affected her identity development negatively. The mentor teacher did not exist in the class during her teaching for several weeks, and therefore, she felt relaxed as having her in the class put a pressure on her. Although she had concerns about her teaching throughout the term, and students' resistance to modern teaching methods along with mentor teacher's restrictions increased her concerns, she realized that she loved children and she could teach them when she was given the full responsibility. However, she did not much chance to put

into practice her imagined identity during the practicum, which posed threat to her identity development:

> *"I used translation frequently as mentor teacher did because students were familiar with it and when I did not translate, they were getting frustrated. They cannot tolerate it when they do not understand as they have very low English language proficiency. I know there should have been very limited L1 usage in the class, but I could not resist students' intolerance, and mentor teacher's directions as she wanted me to teach in the way she did."*

Despite the fact that she was given restricted freedom by the mentor teacher, she was optimistic about her future career:

> *"Still, I feel lucky to see how far I could achieve my goals related to teaching despite all the challenges, and what kind of problems could be encountered. I know there will be always problems and unexpected situations; as a teacher I should have the courage to struggle for maximizing the effectiveness of my teaching considering students' levels, needs, and interests."*

3.3. The Third Participant (Hülya)

The third participant is Hülya, and her university entrance exam score led her to choose ELT (English Language Teaching) department at a state university. In the first day of the practicum, she was asked to teach to a class spontaneously by the headmaster since the mentor teacher was absent:

> *"I used to think that I was unable to teach and I would never be a good teacher. However, after my first teaching experience which was spontaneous, I got positive feedback from my peers in the practicum. This really encouraged and motivated me for the subsequent days in the practicum."*

Even though she was not committed to teaching profession, she considered the practicum as venue where she should practice what she learnt during the teacher education programme. She was very excited during the first weeks of the practicum but she tried to act like a professional teacher in order to gain students' respect, and she described herself as a disciplined teacher:

> *"I am the teacher and they are the students; they should recognize my authority and respect my profession so that I can manage the class."*

Even though she loved discipline as she was trained by disciplined teachers, she was opposed to fear-based discipline:

> *"I believe that I have to maintain my authority to be able to teach; however, I want to achieve this through communicating with my students. Therefore, I frequently use "I" statements to convey my messages explicitly, and try to motivate them to participate in class."*

She did not ask for mentor help as she thought that she should be able to cope with the class by herself since she was given the responsibility to teach during the practicum. She only asked for information related to students' levels in order to tailor her teaching in accordance with students' levels. However, she got feedback related to her teaching from her peers and sometimes mentor teacher during the practicum and she considered it as a valuable experience which would contribute to her profession. Especially constructive feedback and support from peers contributed to development of her teacher identity as she became more interested in teaching and students, and tried to find ways to engage students during the lesson.

She liked it when she met and interacted with the students and noticed that the students loved games. Therefore, she prepared activities including games in the following weeks. Since it was a new experience for her, she observed the students carefully during the first weeks of the practicum:

"I was anxious and afraid of doing something wrong at the beginning. Therefore, I observed the mentor teacher and the students carefully, and took notes related to them. I learnt a lot related to how to behave towards the students."

Students' interest towards English and her also motivated her to teach during the practicum, and she attached greater importance to positive student-teacher relationship like Bahar and Esra:

"I try to show my students that I value what they think and how they feel because they really need this. When I ask questions about themselves, they like it. While teaching emotions-happy, sad, upset, I asked students how they felt; when they felt happy, when they felt sad. They were surprised at first as their classes mainly included coursebook exercises. However, majority of the students participated and answered the questions enthusiastically."

Challenges she encountered during the practicum led her to struggle for exercising her agency, which contributed to her identity development. She could not be oblivious to it when she noticed that students knew nothing about directions although they were taught by the mentor teacher one week ago:

"Through activities which included a problem situation like -I want to study in the library, how can I go there-I had the students to practice the directions since they even did not know 'right-left' although they were taught."

Unlike Bahar and Esra, she was upset to see that students only memorize some basic words and sentences but they could not communicate; they did not understand when the same question was asked in another way or when the subject was different. They did not know alternative answers or questions:

"When I ask 'how are you today', they say 'fine thanks', this is a kind of ritual. One day I asked the same question and got the same answer. Then, I asked whether they really were all fine. They were bewildered. They could not answer."

In spite of the problems she encountered during the practicum, she was happy that she had such an experience:

"I am not planning to be a teacher. I want to realize my dreams after graduation. However, I have seen that I could teach, and I can handle this profession if I have to. Realizing this made me feel satisfied."

4. DISCUSSION and CONCLUSION

This study explored how three pre-service English teachers constructed their teacher identity during a 12-week practicum period. These pre-service teachers had different motives and concerns related to their future career even though they were all exposed to the same teacher education programme. While the first two participants (Bahar and Esra) were excited and motivated before starting the practicum, they faced challenges and experienced disappointments during the practicum. The third participant (Hülya) experienced similar challenges and disappointments; however, she was satisfied with the practicum process. Based on the sociocultural theory which suggests that teacher beliefs and attitudes are rooted in their background and previous experiences (Edwards & Edwards, 2017), it was found that especially negative experiences led student-teachers develop certain types of identities in order to avoid from making mistakes which their teachers did in the past. For instance, Bahar attached greater importance to affective dimension of teaching as she mentioned in her narrative her main purpose was to help her students develop a positive attitude towards English. The main reason for this was her being humiliated by her English teachers when she was a young learner which deeply affected her. Similarly, Hülya described herself as a disciplined teacher; however, her understanding of discipline was different from the one she was exposed to. She was opposed to fear-based discipline. Like Bahar, she cared about emotional well-being of students. In fact, three of the

pre-service teachers gave importance to affective dimension of teaching not only because of their past experiences but also what they witnessed during the practicum. They had the chance to observe how teacher (mentor) misbehavior and peer pressure could prevent students from learning and damage their self-esteem. On the other hand, it was a rewarding experience for them to see how their humanistic approach motivated and encouraged students to take part in the classes, and boosted their teacher identity as an understanding and caring teacher. In their study, Yuan & Lee (2016) also found that realizing his goals as a "friendly teacher" contributed to teacher candidate's identity, and raised his confidence as it was important for him to build a positive relationship with the students. Pre-service teachers' being aware of the importance of student-teacher relationship reflects realities of school context, which implies that when subject teacher education pay attention to skills related to student-teacher relationship and interaction, this may lead pre-service teachers develop a teacher identity which is ready to meet the expectations of a school context (Ruohotie-Lyhty, 2013). All pre-service teachers identified themselves with teacher of communicative approach. This identity emerged and developed as a result of the methodology classes they received during their training in the teacher education programme, and their past experiences as English language learners. As a result of exposure to it, they were aware of the drawbacks of the traditional language teaching methods. However, their identity as communicative language teacher was challenged a lot in the field school as students were used to traditional methods.

At the end of the practicum, Bahar was content that she was able to integrate communicative language teaching methods into her class although she encountered student resistance and rejection from time to time. However, she had a concern about her future career as a language teacher; she was afraid of resembling other teachers as majority of teachers adopted traditional methods. Therefore, she described herself as the minority. Esra also attempted to use communicative methods in her class but she merely achieved her purpose. The main reason for her inefficiency was that she could not withstand student resistance and mentor teacher's authority. As for Hülya, she adopted communicative activities in her class; however, she was not interested in how far she achieved at the end as she was not planning to be a teacher. Still, she was content to see that she could teach even if she did not want to. The gap between training received by pre-service teachers in the pre-service teacher programmes and realities of the school context pre-service teachers encountered during the practicum are frequently voiced in the relevant field (Ruohotie-Lyhty, 2013; Yuan & Lee, 2015). In fact, conventional methods are still prevalent in current educational context (Tokoz-Göktepe & Kunt, 2021). Therefore, the participants in this study were not disappointed by this gap although Hülya experienced some frustration when she realized that students were used to rote learning. All of them indicated that they knew what they would encounter in the practicum school where English is mainly taught through traditional methods. Still, school practicum was a valuable experience for them as they had the opportunity to see whether and how they could adopt communicative language teaching methods in their classes. Moreover, it had a role in shaping their identity as they had to face problems and make decisions related to their teaching (Prabjandee, 2019).

Although it was frequently acknowledged in the current literature that mentor teachers contributed to identity construction of pre-service teachers through providing support and guidance (Yuan & Lee, 2015), it was not the case in the current study. During the practicum, mentor guidance and support was very limited. Bahar and Hülya were content that they did not get any support from the mentor as they believed that they had to manage the whole process by themselves. Their mentor teachers did not intervene during their teaching. Therefore, they were happy as they had the chance to enact their agency through adopting the teaching method(s) they wanted. This finding shows how pursuing their goals helped development of teacher agency (Beauchamp & Thomas, 2009). As for Esra, the mentor teacher was in favor of strictly following the curriculum, which occasionally restricted her agency, and affected her identity development negatively. All of the participants did not

approve of teaching style of the mentor teachers as they mainly adopted traditional methods. Moreover, they were also critics of how mentor teachers treated students from time to time as mentioned in their narratives. Thorough observing the mentor teachers, they learnt how they should not treat the students. Although they did not get help and guidance form the mentor teachers, the pre-service teachers received from and provided feedback to their peers related to their teaching performances during the practicum which contributed to their identity construction (Cohen, 2010).

In conclusion, narratives of the pre-service teachers revealed that they constructed their identities largely based on their previous experiences as language learners, teacher training programme and their interactions with the parties in the field school. Considering its changing and dynamic nature, the issue of teacher identity should be handled with great care especially in the teacher education programmes (Beauchamp & Thomas, 2009). Teacher educators should support pre-service teachers in their identity construction process through stimulating them to be confident and agentic teachers. Therefore, it is important for teacher educators to know about experiences of the pre-service teachers so that they could understand their perceptions and other issues affecting their identities and come up with appropriate solutions as stated by Kayi-Aydar (2015).

Results of the study cannot be generalized as it was context-specific and included a limited number of participants. However, several issues raised in the study was common to a broader context in Turkey. One was about the traditional methods applied in the field school as this is one of the major problems related to language teaching pedagogy in Turkey. Another issue was the existence of pre-service teachers who did not mean to be a teacher as in the case of Hülya. Therefore, further and large-scale studies are needed in order to understand how these issues and other possible issues may affect identity construction of pre-service teachers and how to prepare pre-service teachers to handle with these problems. Lastly, this study relied on narratives of pre-service teachers. Studies including observing pre-service teachers could yield to a better understanding of how they constructed their identities in the practicum school, and including mentor teachers as participants could help to shed light on the interaction between mentor teachers and pre-service teachers, and how this interaction contributed identity formation of pre-service teachers.

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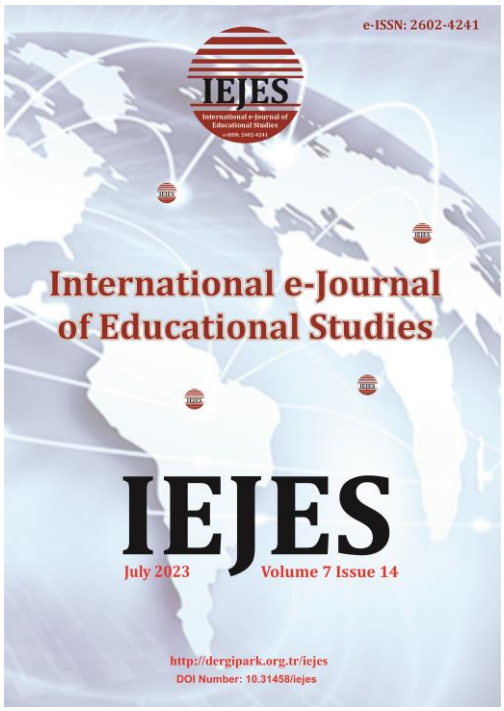

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Abstract

The goal of this research is to investigate self-efficacy degrees of prospective teachers from different disciplines in terms of five sub-dimension of Web Pedagogical Content Knowledge (W-PACK) and whether different factors (gender, grade, or department) significantly affect prospective teachers' perceived self-efficacy levels or not. The study employed the survey method, a quantitative non-experimental research technique. The students, who were in second, third, and fourth grades, successfully finished the two-period first-year information technology obligatory courses. The study's findings demonstrated that pre-service teachers were quite confident in their ability to use the web and understand its general, communication, content, pedagogical, and attitudinal elements. The findings also revealed that there were no statistically significant variations in the responses with respect to gender across all of the sub-scales. Moreover, the findings demonstrated that there were no appreciable variations in any of the sub-scales of the W-PACK regarding departments. With the exception of attitude toward web-based education, there were no statistically significant variations between participant grades in the five dimensions or the perceived self-efficacy degrees of prospective teachers across all the sub-dimensions. The results of this study, however, revealed that attitudes toward web-based instruction varied considerably across the junior and senior groups. In light of the findings, technology and web-based teaching methods should be coordinated with the existing teaching curricula to provide teacher candidates with the application of content-pedagogical-technology components in an integrated manner.

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Research Article

Perceived Self-Efficacy Levels of Prospective Teachers Regarding Some Factors in the Framework of Web Pedagogical Content Knowledge*

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Abstract

The goal of this research is to investigate self-efficacy degrees of prospective teachers from different disciplines in terms of five sub-dimension of Web Pedagogical Content Knowledge (W-PACK) and whether different factors (gender, grade, or department) significantly affect prospective teachers' perceived self-efficacy levels or not. The study employed the survey method, a quantitative non-experimental research technique. The students, who were in second, third, and fourth grades, successfully finished the two-period first-year information technology obligatory courses. The study's findings demonstrated that pre-service teachers were quite confident in their ability to use the web and understand its general, communication, content, pedagogical, and attitudinal elements. The findings also revealed that there were no statistically significant variations in the responses with respect to gender across all of the sub-scales. Moreover, the findings demonstrated that there were no appreciable variations in any of the sub-scales of the W-PACK regarding departments. With the exception of attitude toward web-based education, there were no statistically significant variations between participant grades in the five dimensions or the perceived self-efficacy degrees of prospective teachers across all the sub-dimensions. The results of this study, however, revealed that attitudes toward web-based instruction varied considerably across the junior and senior groups. In light of the findings, technology and web-based teaching methods should be coordinated with the existing teaching curricula to provide teacher candidates with the application of content-pedagogical-technology components in an integrated manner.

Keywords: Prospective teachers, web pedagogical content knowledge, self-efficacy levels

1. INTRODUCTION

The advent of contemporary computer technologies and digital gadgets into education has brought about a new paradigm that has fundamentally changed how teaching and learning take place (Chai, Koh, Ho & Tsai, 2012). Prensky (2001) coined the phrase "digital natives," which is now used to refer to younger generations who appear to be "native speakers of the digital language" of social media, video games, computers, and other websites (Prensky, 2001). Teachers must enhance their ICT (information and communication tools) skills to match this generation's expectations because they have a tremendous capacity to use various technologies in many facets of their lives (Prensky, 2001). According to Lee and Tsai (2010), teachers must successfully utilize their pedagogical, technological, and subject-matter skills in order to change classrooms from teacher-centered settings into collaborative and interactive places.

From "Pedagogical Content Knowledge" (PCK), the theoretical concept known as "Technological Pedagogical Content Knowledge" (TPACK) was constructed by Shulman (1986). Shulman (1986) defines it as "PCK represents the blending of content and pedagogy into an

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understanding of how particular topics, problems, or issues are organized, represented, and adapted to the diverse interests and abilities of learners, and presented for instruction". Mishra and Koehler (2006) expanded the term to include academics who concentrate on utilizing ICT in the classroom. Mishra and Koehler (2006) claim that the TPACK framework places equal emphasis on knowledge of content (CK), or specifics about the subject or field, and knowledge of technology (TK), or particular applications, hardware, and software. It also emphasizes how to communicate with, guide, and instruct learners in addition to emphasizing pedagogy (PK) and subject-matter expertise (CK). Through the merger of each knowledge base, pedagogical content knowledge (PCK) and technical content knowledge (TCK), which is a comprehension of the subject matter as it is represented technologically, are generated. Understanding the connections between educational practices and technologies signifies technological pedagogical knowledge (TPK). TPACK, which includes PCK, TCK, and TPK, is the understanding of how to benefit technology to carry out teaching approaches for a variety of subject matter content (See Figure 1).

The interaction between these three knowledge parts-technology, content, and pedagogy-is described by a notion known as TPACK, which links technology to program content and pedagogical techniques. Technology, pedagogy, and content are all reliant on the teacher2s abilities and consideration for the students (Shin et al., 2009). In order to improve teachers' usage of ICT in the classroom, undergraduate training is crucial (Gao, Choy, Wong & Wu, 2009). Studies show that future educators who are more computer savvy are more inclined to use technology in their classrooms (Paraskeva, Bouta, & Papagianna, 2008). Teachers with high self-efficacy have been much more enthusiastic and receptive to introducing creative strategies that provide pupils with interesting learning possibilities (Tschannen-Moran & Woolfolk Hoy, 2001). Moreover, research demonstrates that teacher candidates who underwent ICT training have high levels of computer self-efficacy (Aydoğmuş & Ibrahim, 2022; Brown & Warschauer, 2006; Lee, Chai, Teo & Chen, 2008). Therefore, assessments of a teacher's technical self-efficacy can be used to gauge how well they can advance the technologies that are crucial teaching tools (Paraskeva et al., 2008). The majority of prospective teachers, however, lack the skills needed to properly utilize these resources in the classroom (Kay, 2006). Kay (2006) asserts that "there is no consolidated picture on how to effectively introduce technology to pre-service teachers."

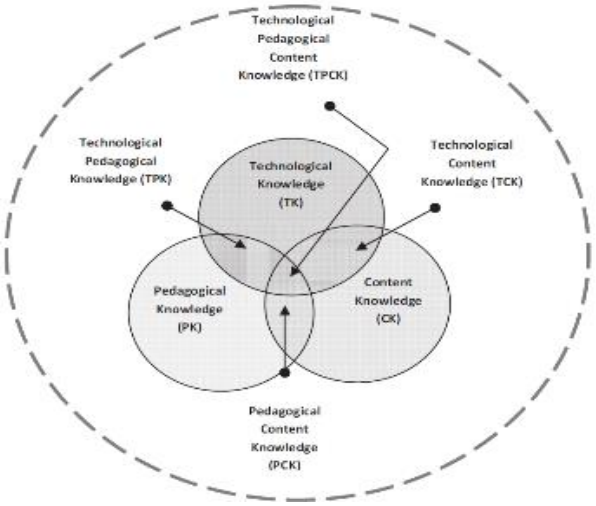

Figure 1. Technological pedagogical content framework (TPACK) (Koehler & Mishra, 2008)

It has become apparent that the technological content information of the Internet and the Web should be structured differently since the characteristics of the Web differ from other technologies and

the usage of the Web comprises some technologies (Horzum, 2011). Due to TPCK's inadequacy as a source of information in the educational setting, the web dimension has emerged as a crucial demand (Lee et al., 2008). In response to this need, Lee and Tsai (2010) and Lee et al. (2008) created the notion of Web Pedagogical Content Knowledge by incorporating the web into the idea of Technology Pedagogical Content Knowledge. These three key components-content, pedagogy, and web-interact to provide an understanding of web-based pedagogical content (WPCK). Basic web competencies include using web-related technology, communicating, and interacting online (Lee & Tsai, 2010). Mishra and Koehler (2006) state that numerous research has shown that teacher candidates' training programs' deficiencies limit the development of their technology skills from having a solid theoretical base. Mishra and Koehler (2006) enhanced TPACK by constructing on the idea of PCK (Shulman, 1986) and provided educators with a strong theoretical foundation to support their research into utilizing technology in the classroom. After the TPACK framework was introduced by Mishra and Koehler (2006), there have been many studies on the measurement of the TPACK levels of teacher candidates (Azgın & Şenler, 2018; Horzum, 2011; Kwangsawad, 2016) and in-service teachers (Delen, 2016) regarding different factors such as gender (Balçın & Ergün, 2018; Çiftçi & Dikmenli, 2018; Koh, Chai & Tsai, 2010); department (Çiftçi & Dikmenli, 2018; Yağcı, 2016) and year (Balçın & Ergün, 2018; Kavanoz, Yüksel & Özcan, 2015).

Lin, Tsai, Chai, and Lee (2013) carried out an investigation on science pre-service and in-service educators to explore their perceptions of TPACK with respect to demographic variables such as gender, age, and years of teaching. The results indicated female teachers had remarkably higher pedagogical knowledge but lower technological knowledge compared to males. Kavanoz et al. (2015) investigated EFL prospective teachers' self-efficacy and attitudes toward W-PACK. The findings indicated that teacher candidates displayed high levels of perceived self-efficacy and attitudes in the domains of "Web-general knowledge" and "Web-pedagogical knowledge" but lower scores in the domains of "Web-communicative" and "Web-Pedagogical Content knowledge". Moreover, the findings revealed no significant differences in terms of gender and year-level variables. Yağcı (2016) examined the TPACK competencies of teacher candidates who receive pedagogical formation education. According to the results of the research, the TPACK proficiency levels of pre-service teachers were found moderate level. Findings also revealed remarkable differences in terms of their department, age groups, and computer usage degrees but no significant differences regarding their gender.

İşler and Yıldırım (2018) investigated perceptions of Turkish prospective EFL teachers regarding their TPACK levels and the factors affecting pre-service EFL teachers' TPACK levels. The research included both quantitative and qualitative data analysis procedures. The findings revealed that pre-service EFL teachers who took part in the study showed a high level of TPACK. Another study conducted by Balçın and Ergün (2018) investigated science pre-service teachers' TPACK self-efficacy degrees regarding some variables such as gender, grade, high school graduation, etc. A cross-sectional survey model was used in this research. The results of the research showed that pre-service teachers had the highest self-efficacy levels in content knowledge sub-dimension among their TPACK dimensions. Moreover, the study revealed no remarkable difference in TPACK levels of pre-service teachers with respect to gender, grade, and internet access variables. Çiftçi and Dikmenli, (2018) investigated TPACK self-efficacy levels of prospective teachers from the Social Sciences and Geography departments with respect to some variables such as gender, high school graduation, and computer usage levels. Findings revealed no significant differences in terms of gender variables.

All in all, although the relevant literature shows that there has been a great amount of research on pre-service teachers' TPACK self-efficacy levels in terms of some variables in the Turkish context, studies generally focus on pre-service teachers' self-efficacy levels of TPACK taking a basis on individual departments such as Science, Mathematics, Social Sciences or English language teaching

(Balçın & Ergün, 2018; İşler & Yıldırım, 2018; Kavanoz et al., 2015), there have been very limited comparative studies on prospective teachers' TPACK self-efficacy levels from different disciplines regarding some factors (Çiftçi & Dikmenli, 2018; Gömleksiz & Fidan, 2011). In addition, "the TPACK construct is a highly complex concept that is still open to further investigation" (Rahimi & Pourshahbaz, 2018), much more research has strongly been suggested to be conducted in order to clarify and elaborate TPACK knowledge in order to gain insights for professional development teacher candidates (Archambault & Crippen, 2009; Cox & Graham, 2009). Moreover, as different focus groups might create different findings, the relationship between demographic factors and TPACK perceptions needs further investigation. For this reason, the goal of the current research is to investigate self-efficacy degrees of teacher candidates from the fields of Special Education, ELT, and Primary School Education in terms of five sub-dimension of W-PACK and whether different factors (gender, grade, or department) significantly affect prospective teachers' perceived self-efficacy levels or not. The study was essentially guided by the research questions below:

1. What are prospective teachers' perceived self-efficacy levels regarding knowledge of web general, knowledge of web-communicative, knowledge of web-communicative, knowledge of web content, knowledge of web pedagogical content, and attitude towards web-based instruction?

2. Do gender, department, and grade of prospective teachers make any difference in their perceived self-efficacy levels regarding knowledge of web general, knowledge of web-communicative, knowledge of web-communicative, knowledge of web content, knowledge of web pedagogical content, and attitude towards web-based instruction?

2. METHOD

The study employed the survey method, which is a non-experimental quantitative research technique (Johnson, 2001; Johnson & Onwuegbuzie, 2004). The survey method is a research technique that compares the relationships between variables, tries to depict a past or present situation as it is, and is based on data collected over a predetermined time period (Karasar, 2000).

2.1. Participants

The participants, in the second, third, and fourth grades, had all successfully finished the two-period first-year information technology required courses. These courses' major goal is to teach students the fundamentals of information technology, web-based education, and online resources for learning. 160 undergraduate participants from the fields of English Language Teaching, Special Education, and Primary School Education at Tokat Gaziosmanpaşa University served as the study's responses throughout the 2022–2023 academic year. The group's average age ranged from 20 to 22. The following information about the respondents' demographics is taken from Table 1:

Table 1. Demography of the respondents

		f	%
Gender	Female	114	71.3
	Male	46	28.8
Department	ELT	56	35.0
	Primary School Education	31	19.4
	Special Education	73	45.6
Grade	Sophomore	68	42.5
	Junior	61	38.1
	Senior	31	19.4
Total		160	100%

According to Table 1, there were 114 (71.3%) female students and 46 (28.8%) male students. 56 (35%) of the participants at the Faculty of Education, Tokat Gaziosmanpaşa University came from the English Language Teaching department, 73 (45.6%) from the Special Education department, and 31 (19.4%) from the Primary Education department. Among the participants, there were 31 (19.4%) seniors, 61 (38.1%) juniors, and 68 (42.5%) sophomores.

2.2. Data Collection Instruments

The study gathers information on pre-service teachers' attitudes and self-efficacy towards TPACK using a 5-point Likert-type scale with a range of 1 to 5. A Turkish translation of Lee and Tsai's (2010) "Technological Pedagogical Content Knowledge (TPACK)" scale by Horzum (2011) served as the research instrument. The scale is composed of a total of 30 components, which are distributed among 5 distinct sub-dimensions. The following qualities are listed respectively: "attitude toward online-based instruction," "web general," "web communicative," "web content knowledge," and "web pedagogical content knowledge." The Statistical Package 26.0 was used to analyze the data using inferential and descriptive statistics. The examination of the questionnaire yielded a Cronbach Alpha of .87. Data on participant demographics, including gender, program type, and grade, was also gathered in this study using "Personal Knowledge Form" created by the researchers.

2.3. Data Analysis

Inferential statistics were performed using SPSS 26.0, along with descriptive statistics that included mean scores and standard deviations. Using an independent samples t-test and an ANOVA, it was determined if three covariates (gender, year, and department) had any impact on the five dependent variables (attitude toward web-based teaching, web general, web content knowledge, web communicative, and web pedagogical content knowledge). When evaluating arithmetic means, the following average values between 1.00 and 5.00 are established: Overall agreement ranges from 4.21 to 5.00, the agreement is 3.4 to 4.20, neutrality is 2.6-3.40, disagreement is 1.8 to 2.60, and the whole disagreement is 1.00 to 1.80.

The values of Skewness and Kurtosis were analyzed in order to check whether the data's normality assumption is met. Tables 2 presents the results:

Table 2. Skewness and Kurtosis values

	Statistics	Std. Error
Skewness	-.889	.192
Kurtosis	.273	.381

The values of Skewness and Kurtosis varied between -.889 and .192 for Skewness and .273 and .381 for Kurtosis. When the values of the kurtosis and skewness are between -1.5 and +1.5, the dispersion is regarded as standard (Tabachnick & Fidell, 2013). The impact of gender on pre-service teachers' perceived self-efficacy levels regarding their TPACK knowledge was investigated using an independent groups t-test, and the impacts of department and grade were investigated using a one-way ANOVA.

3. FINDINGS

This section reveals the statistical analysis of the quantitative data and the findings obtained from this data analysis were given in detail. Table 1 presents the details of the first research question below:

Table 1. Self-efficacy levels for web-general knowledge

"Web general knowledge"	$\bar{X}$	SD
1. "Be able to click the hyperlink to connect to another Website."	4.01	1.17
2. "Be able to key in the Website address to connect to a particular Website."	4.61	.69
3. "Be able to print out the content of a Website."	4.33	.92
4. "Be able to search for information on the Web using keywords."	4.50	.76
5. "Be able to download pictures from the Web."	4.71	.63
6. "Be able to use the Web search engines."	4.79	.51
7. "Be able to copy the text on the Web into the Word"	4.66	.76
Total	4.51	.26

Table 1 shows that item 6—where participants completely agreed that they were able to use Web search engines—had the highest mean score ($\bar{X}$: 4.79; SD:.51) among the other items ($\bar{X}$: 4.61; SD:.69; $\bar{X}$: 4.33; SD:.92; $\bar{X}$: 4.50; SD:.76; $\bar{X}$: 4.71; SD:.63; and $\bar{X}$: 4.66; SD:.76). The participants' overall mean score for web general knowledge is at the "I totally agree" level ($\bar{X}$: 4.51; SD: .26). The findings demonstrate that pre-service teachers consider themselves sufficient in the general web sub-dimension.

Table 2. Self-efficacy levels for web-communicative knowledge

"Web communicative knowledge"	**$\bar{X}$**	**SD**
8. "Be able to read others' messages in a chat room."	4.14	1.16
9. "Be able to set a nickname by yourself in an online chat room."	4.20	1.16
10. "Be able to talk to others one on one in an online chat room."	4.35	.97
11. "Be able to provide information or respond to someone else on a BBS (Bulletin Board System)."	3.92	1.11
Total	4.15	.91

Table 2 demonstrates that participants who agreed that they were able to converse privately with individuals in an online chat group received the highest mean score ($\bar{X}$: 4.35; SD: .97) for item 10. The participants' overall mean score for online communicative knowledge is at the "I agree" level ($\bar{X}$: 4.15, SD: .91). The results show that prospective teachers believe they are adequate in the sub-dimension of web communicative knowledge.

Table 3. Self-efficacy levels for web-content knowledge

"Web- content knowledge"	$\bar{X}$	SD
12. "Know that Web technology can provide various materials to enrich course content."	4.36	.85
13. "Know how to search online resources for course content."	4.62	.69
14. "Know how to select proper content from Web resources."	4.57	.65
15. "Be able to search related online materials for course content."	4.41	.80
16. "Be able to search for various materials on the Web to be integrated into course content"	4.41	.75
Total	4.48	.63

According to Table 3, participants entirely agreed that they know "how to search online resources for course content" in response to question 13, which got the highest mean score ($\bar{X}$: 4.62; SD:.69). The majority of the participants received "I totally agree" as their overall mean score for their awareness of the online content ($\bar{X}$: 4.48, SD: .63). The findings demonstrate the teacher candidates displayed high self-efficacy levels in the understanding of web content sub-dimension.

Table 4. Self-efficacy levels for web-pedagogical knowledge

Web- pedagogical knowledge	$\bar{X}$	**SD**
17. "Know how to apply teaching modules on the Web into courses."	4.18	.78
18. "Be able to use Web technology to enhance teaching."	4.40	.72
19. "Be able to use the Web to enhance students' learning motivation"	4.75	.73
20. "Be able to select proper existing Web-based courses to assist teaching."	4.36	.78
21. "Be able to apply Web technology to use multiple teaching strategies on a particular course unit."	4.36	.72
22. "Be able to guide students to use Web resources to study a certain course unit."	4.34	.79
23. "Be able to use Web resources to guide students' learning activities for a certain course unit."	4.38	.76
24. "Be able to use Web technology to support teaching for the content of a particular course unit."	4.41	.80
Total	4.39	.61

As seen in Table 4, the findings showed that the top-rank mean score ($\bar{X}$: 4.75; SD: .73) was from the item 19 in which participants totally agreed that "they were able to use the Web to enhance students' learning motivation." The total mean score of the participants' perspectives on the web pedagogical knowledge is at the level of "I totally agree" ($\bar{X}$: 4.39, SD: .61). The findings demonstrate that prospective teachers had high self-efficacy levels in the web pedagogical knowledge sub-dimension.

Table 5. Self-efficacy levels for attitude toward web-based instruction

"Attitude toward web-based instruction"	$\bar{X}$	**SD**
25. "Web technology can be actually used in the practice of teaching."	4.41	.747
26. "The characteristics of the Web can help instruction."	4.57	.649
27. "Web technology can enhance teaching skills."	4.53	.717
28. "Web-related resources can enrich course content."	4.56	.660
29. "Web-based teaching can enhance students' learning motivation."	4.56	.688
30. "Web-based teaching is a future trend in education."	4.57	.678
Total	4.53	.55

The items with the highest mean scores ($\bar{X}$: 4.57; SD: .649) were the item 26 (where participants entirely agreed that the properties of the Web can enhance instruction) and the item 30 (participants entirely agreed that "web-based teaching is a future trend in education"). The total mean score of the participants' perspectives on the attitude towards web-based instruction is at the level of "I totally agree" ($\bar{X}$: 4.53, SD: .55). In the attitude sub-dimension of web-based education, the findings indicate that pre-service teachers exhibited high levels of self-efficacy.

The second research question concerns whether gender makes a difference in students' self-efficacy levels across sub-scales or not. In response to the second research question, independent samples t-test was performed to reveal gender differences.

Table 6. The findings of the independent samples t-test for gender differences

Overall Results	Gender	N	X̄	SD	t	p
Web-general knowledge	Female	114	4.53	.49	.649	.517
	Male	46	4.47	.67		
Web-communicative knowledge	Female	114	4.10	.92	-1.11	.269
	Male	46	4.28	.88		
Web-content knowledge	Female	114	4.49	.60	.461	.646
	Male	46	4.44	.71		
Web-pedagogical knowledge	Female	114	4.42	.60	1.074	.284
	Male	46	4.31	.65		
Attitude	Female	114	4.58	.52	1.735	.085
	Male	46	4.41	.62		

The findings demonstrate non-significant results, as shown in Table 6. It means that there is no statistically significant difference between males and females in terms of perceived self-efficacy degrees for pre-service teachers with regard to general web knowledge (t (158)=.649, p>.05); with regard to web communicative knowledge (t (158) = -1.11, p>.05); with regard to web-content knowledge (t (158) =.461, p>.05); with regard to web-pedagogical knowledge (t (158) = 1.074, p>.05) and with regard to attitude toward online education (t (158)= 1.735, p>.05). This indicates that there were no statistically remarkable disparities between the sexes in pre-service teachers' perceived self-efficacy degrees across all sub-scales. To reveal if the department has a significant effect on pre-service teachers' perceived self-efficacy levels in relation to the dimensions of web-general knowledge, web-communicative knowledge, web-content knowledge, web-pedagogical knowledge, and attitude toward web-based instruction, a one-way analysis of variance was conducted. The conclusions are presented in Tables 7 and 8 as follows:

Table 7. The descriptive statistics of students' departments

Overall Results	Department	N	X̄	SD
Web-general knowledge	English Language Teaching	56	4.44	.54
	Special Education	73	4.49	.59
	Primary School Education	31	4.71	.41
Web-communicative knowledge	English Language Teaching	56	4.24	.84
	Special Education	73	4.10	.89
	Primary School Education	31	4.11	1.10
Web-content knowledge	English Language Teaching	56	4.49	.71
	Special Education	73	4.45	.57
	Primary School Education	31	4.52	.63
Web-pedagogical knowledge	English Language Teaching	56	4.42	.68
	Special Education	73	4.34	.54
	Primary School Education	31	4.46	.66
Attitude	English Language Teaching	56	4.50	.62

Special Education	73	4.48	.52
Primary School Education	31	4.72	.46

According to Table 7, 56 participants came from the English Language Teaching department, 73 from Special Education, and 31 from the Primary School Education program. Table 7 displays the findings of the one-way analysis of variance which was carried out to reveal whether there was a statistically significant difference in the mean scores in terms of department factor. As for web-general knowledge, the means for the departments of English Language Teaching ($\bar{X}$: 4.44, SD: .54), Special Education ($\bar{X}$: 4.49, SD: .59), and Primary School Education ($\bar{X}$: 4.71 SD: .41) had comparable results.

As for web-communicative knowledge, Table 7 shows that the means for the departments of English Language Teaching ($\bar{X}$: 4.24, SD: .84), Special Education ($\bar{X}$: 4.10, SD: .89), and Primary School Education ($\bar{X}$: 4.11 SD: 1.10) had similar results. As for web-content knowledge, the findings of the study showed that there was a good agreement between the means for the departments of Primary School Education ($\bar{X}$: 4.52, SD:.63), Special Education ($\bar{X}$: 4.45, SD:.57), and English Language Teaching ($\bar{X}$: 4.49, SD:.71). For the dimension of web-pedagogical knowledge, the findings of the study show that the means of the English Language Teaching ($\bar{X}$: 4.42, SD:.68), Special Education ($\bar{X}$:4.34; SD:.54), and Primary School Education ($\bar{X}$:4.46; SD:.66) departments had comparable scores. For the last dimension of attitude, the study's findings demonstrate that the departments of English Language Teaching ($\bar{X}$: 4.50, SD:.62), Special Education ($\bar{X}$:4.48; SD:.52), and Primary School Education ($\bar{X}$:4.72 SD:.46) all had similar scores.

Table 8. One way-ANOVA outcomes for department differences

		Sum of Squares	df	Mean Square	F	p
Web-general knowledge	Between Groups	1.61	2	.809	2.73	0.68
	Within Groups	46.8	157	.296		
Web-communicative knowledge	Between Groups	.620	2	.310	.367	.693
	Within Groups	132.599	157	.845		
Web-content knowledge	Between Groups	.122	2	.061	.150	.861
	Within Groups	64.054	157	.408		
Web-pedagogical knowledge	Between Groups	.424	2	.212	.549	.579
	Within Groups	60.66	157	.386		
Attitude	Between Groups	1.307	2	.654	2.128	.123
	Within Groups	48.230	157	.397		

According to Table 8, there were no statistically significant departmental differences on the dimension of web-general knowledge (F (157) = 2.73, p>.05); web-communicative knowledge (F (157) =.367, p>.05); web-content knowledge (F (157) =.150, p>.05); web-pedagogical knowledge (F (157) = .549, p>.05) and attitude towards web-based instruction (F (157) = 2.128, p>.05). The findings indicated that the department factor had no appreciable effect on participants' assessed levels of self-efficacy across all dimensions.

To ascertain if the grade has a remarkable impact on perceived self-efficacy levels in terms of all dimensions, a one-way analysis of variance was conducted. Tables 9 and 10 provide evidence for the conclusions listed below:

Table 9. The mean scores and standard deviations of students' grade

Overall Results	Grade	N	X̄	SD
Web-general knowledge	sophomore	68	4.44	.57
	Junior	61	4.50	.55
	senior	31	4.71	.41
Web-communicative knowledge	sophomore	68	4.11	.93
	Junior	61	4.21	.78
	senior	31	4.13	1.11
Web-content knowledge	sophomore	68	4.46	.67
	Junior	61	4.46	.59
	senior	31	4.55	.63
Web-pedagogical knowledge	sophomore	68	4.39	.62
	Junior	61	4.34	.59
	senior	31	4.49	.66
Attitude	sophomore	68	4.53	.56
	Junior	61	4.43	.57
	senior	31	4.74	.45

Table 9 shows that there were 68 sophomores, 61 juniors, and 31 seniors among the participants. As seen in Table 9, in the dimension of web-general knowledge, the mean scores and standard deviations of sophomores (X̄:4.44, SD: .57), juniors (X̄:4.50, SD: .55), and seniors (X̄:4.71, SD: .41) were comparable. As for the web-communicative knowledge dimension which includes the mean scores and standard deviations of sophomores (X̄:4.11, SD: .93), juniors (X̄:4.21, SD: .78), and seniors (X̄:4.13, SD: 1.11), it has been seen that there were no significant differences across year levels.

Moreover, there were no discernible differences between the mean scores and standard deviations of sophomores (X̄: 4.46, SD: .67), juniors (X̄: 4.46, SD:.59), and seniors (X̄:4.55, SD:.63) in the dimension of web-content knowledge. As indicated in Table 9, as for the web-pedagogical knowledge dimension, there were no discernible differences across the year levels for the mean scores and standard deviations of sophomores (X̄:4.39, SD:.62), juniors (X̄:4.34, SD:.59), and seniors (X̄:4.49, SD:.66). However, in the dimension of attitude toward web-based instruction, There were substantial variations between year levels, as displayed in Table 9 for the mean scores and standard deviations of sophomores (X̄:4.53, SD:.56), juniors (X̄:4.43, SD:.57), and seniors (X̄:4.74, SD:.45).

One-way analysis of variance (ANOVA) was performed to see if there was a statistically significant difference in the mean scores for the grade variable are shown in Table 10.

Table 10. One way-ANOVA outcomes for grade differences

		Sum of Squares	df	Mean Square	F	p
Web-general knowledge	Between Groups	1.66	2	.831	2.808	.063
	Within Groups	46.44	157	.296		
Web-communicative knowledge	Between Groups	.382	2	.191	.226	.798
	Within Groups	132.837	157	.846		
Web-content knowledge	Between Groups	.215	2	.108	.264	.768
	Within Groups	63.961	157	.407		
Web-pedagogical knowledge	Between Groups	.500	2	.250	.648	.524
	Within Groups	60.590	157	.386		
Attitude	Between Groups	1.912	2	.956	3.151	.046
	Within Groups	47.626	157	.303		

Table 10 shows that there is no statistically significant variation in pre-service teachers' assessments of their own self-efficacy across grade levels with regard to web-general knowledge (F (157) = 2.808, p>.05); in terms of web-communicative knowledge (F (157) =.226, p>.05); in terms of web-content knowledge (F (157) =.264, p>.05); in terms of web-pedagogical knowledge (F (157) =.648, p>.05). A one-way analysis of variance showed no major difference between the sophomore, junior, and senior groups. However, the findings show substantial results, showing that the prospective teachers' perceived levels of self-efficacy in the area of attitude toward web-based instruction knowledge are significantly influenced by their year level (F (157) = 3.151, p< .05). According to a one-way analysis of variance, there were statistically significant differences between the sophomore, junior, and senior groups.

As a result, post-hoc analyses utilizing the Bonferonni post-hoc test were performed to reveal where the remarkable variations among the groups occur.

Table 11. Bonferonni results for grade differences

(I) Grade	(J) Grade	Mean Difference (I-J)	Sig.	95% Confidence Interval	
				Lower Bound	Upper Bound
2.00	3.00	.09470	.993	-.1403	.3297
	4.00	-.21007	.241	-.4989	.0788
3.00	2.00	-.09470	.993	-.3297	.1403
	4.00	-.30478*	.039	-.5988	-.0108
4.00	2.00	.21007	.241	-.0788	.4989
	3.00	.30478*	.039	.0108	.5988

According to Table 31, Bonferonni post-hoc test results showed that attitude towards web-based instruction knowledge was significantly different between junior and senior groups (p=.039, CI= [.108, .5988]). There was no statistically significant difference between sophomore groups and junior groups (p=.993) and sophomore groups and senior groups (p=.241).

4. DISCUSSION AND CONCLUSION

The goal of the current research is to investigate self-efficacy degrees of pre-service teachers from three departments in the Faculty of Education in terms of five sub-dimension of Web Pedagogical Content Knowledge (W-PACK) and whether different factors (gender, grade or department) significantly affect prospective teachers' perceived self-efficacy levels or not. According to the study's findings, pre-service teachers were quite confident in their knowledge of the web's general, communicative, content, pedagogical, and attitudinal characteristics. This finding aligns with prior research (Gömleksiz & Fidan, 2011; İşler & Yıldırım, 2018; Kavanoz et al., 2015), which report a high level of self-efficacy perceptions of TPACK. Kavanoz et al., (2015) examined EFL prospective teachers' views of self-efficacy in terms of Web pedagogical content knowledge and their attitudes towards web-based instruction. The results demonstrated that EFL pre-service teachers had a high level of self-efficacy and positive perceptions toward web-based instruction. In another study, Kwangsawad (2016) demonstrated that Taiwanese prospective EFL teachers had high scores in all domains of TPACK knowledge. One reason for this positive conclusion might be that these youth, who are regarded as digital natives (Prensky, 2001) and who have grown up surrounded by technology and mobile devices, believe themselves to be adept internet users. These students have also participated in freshman-year computer-based courses as sophomores, juniors, and seniors. They could have gained more knowledge about integrating technology into teaching.

The results also revealed no statistically significant differences between males and females with respect to any of the sub-research questions across all of the sub-scales. Females did, however, show slightly higher levels of self-efficacy in all sub-dimensions, with the exception of the web-communicative knowledge dimension, when the mean scores of males and females were compared. This result is in line with previous research (Kavanoz et al., 2015; Schumacher & Morahan-Martin, 2001; Yang 2012), which found no obvious differences between males and females. Yang (2012) looked into how students' perceptions of gender and their sense of self-efficacy related to one another. The study's findings showed that there were no significant variations in male and female students' levels of self-efficacy or attitudes. The present study found that male students only slightly outperformed female students in one subscale of the web communicative knowledge dimension. This result may be in agreement with some studies (Gömleksiz & Fidan, 2011; Kavanoz et al., 2015), which found that male students had significantly higher mean scores in the web-communicative knowledge sub-scale compared to female students. One explanation might be that male students are more inclined than female pupils to compose lengthy messages (Androutsopoulos, 2006).

The results also revealed no statistically remarkable variations in the sub-scales of W-PACK between participant departments in any of the aspects. When comparing students from the Primary School Education department to those from other departments' mean scores, it was found that, with the exception of the web-communicative knowledge base, they had slightly higher levels of self-efficacy. This finding aligns with other previous studies (Çiftçi & Dikmenli, 2018; Karademir, 2015). Çiftçi and Dikmenli (2018) conducted an investigation on the relationship between pre-service teachers' TPACK self-efficacy levels and their departments. The study revealed no statistically significant differences in the scores of all domains of TPACK in terms of the department variable. Another study conducted by Karademir (2015) also revealed that the majors of prospective teachers had no significant difference in their TPACK self-efficacy degrees. However, the finding of this research contradicts with the results of some previous research (Bal & Karademir, 2013; Gömleksiz & Fidan, 2011). In their research, Gömleksiz and Fidan (2011) revealed that teacher candidates from the geography department considered themselves more competent in the sub-dimension of the general web than other department graduates. The study also revealed that teacher candidates from the biology department had the lowest TPACK self-efficacy levels compared to other departments.

Except for attitude toward the understanding of web-based education, there were no statistically significant variations between participants' grades in the five W-PACK dimensions or the perceived self-efficacy levels of pre-service teachers across all the sub-dimensions. The results of the current study, however, revealed that there were substantial differences in attitudes between the junior and senior groups about web-based training. Compared to junior groups, senior groups were more likely to have a more favorable attitude toward web-based training. The results were consistent with the literature (Kavanoz et al., 2015), which indicated no variations between year levels that were statistically significant. This discovery might be the outcome of computer-based courses that have a favorable impact on their attitudes and levels of self-efficacy (Torkzadeh, Chang & Demirhan 2006). Senior groups, however, were found to have much more favorable opinions regarding web-based learning in the current study. The reason for senior groups' more favorable attitudes toward web-based instruction might be that they entered their final year of the teacher training program and implemented micro lessons in their practicum settings.

For teacher preparation programs, the current study has some pedagogical implications. Pre-service teacher education programs are suggested to teach prospective teachers how to use pedagogy, content, and technology to deliver successful instruction in their subject areas. In addition to enabling teacher candidates to develop technology-based materials for technology integration and deliver technology-based education utilizing these materials in their practicum settings, teacher training programs ought to offer well-qualified courses in the field. Technology and web-based teaching

methods should be coordinated with the existing teaching curricula to provide teacher candidates with the application of content-pedagogical-technology components in an integrated manner.

The present investigation has several restrictions. One problem with the current study was the small sample size. In order to produce more trustworthy and broadly applicable results, future research could recruit additional volunteers from diverse departments and from other disciplines. Another issue was the fact that only quantitative data was used as a source of knowledge. In order to ensure that the results are consistent, future research may include qualitative data in addition to quantitative data.

Based on the findings of this research, the following recommendations can be summarized:

- To better understand the implications of these results, future studies could address the deeper analysis of qualitative data such as an interview, observation or open-ended questions for more reliable and valid findings.
- There could be other factors such as teaching experience, age, and the influence of TPACK constructs that could be investigated for further research.
- Research can be conducted with different groups of participants from different majors with different data collection tools as they might create different results.

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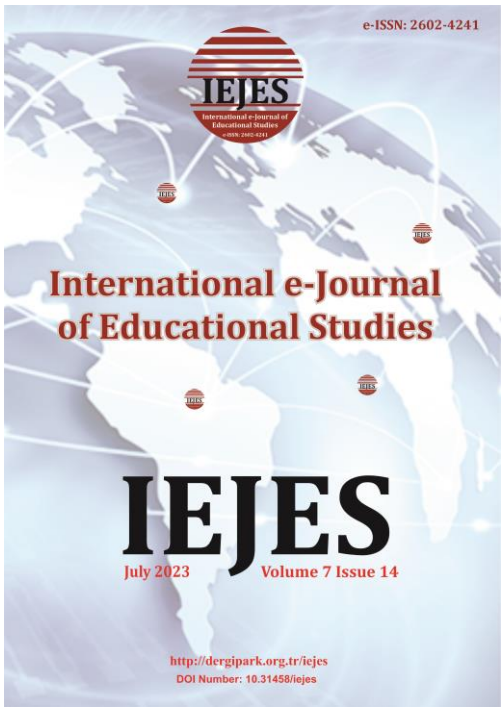

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Abstract

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Research Article

Examining the Building and Coding Tasks Developed by Pre-service Mathematics Teachers in Terms of Curriculum Integration*

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Abstract

Interdisciplinary approach recommended for use in the teaching mathematics in the last decade, the related literature shows that limited study focused on the reflection of the interdisciplinary approach in teaching practice. The aim of this study is to evaluate pre-service mathematics teachers' task development processes on interdisciplinary approaches through building and coding tasks. Research was conducted with 28 pre-service mathematics teachers studying at a mathematics education department in Turkey. Data were gathered from the analysis of lesson plans and semi-structured interviews. The findings that were obtained through the lesson plans of the participants indicated that participants were able to associate building tasks more with numbers content domain and mathematical modeling skills, and coding tasks with geometry content domain and algorithmic thinking skills. The participants stated that tasks involving coding in their lesson plans would be more useful in terms of teaching mathematics and listed the factors limiting the use of building tasks as technical knowledge and cost.

Keywords: Building task, coding task, curriculum integration, teacher education

1. INTRODUCTION

Determining the factors that affect the learning and teaching of mathematics is at the forefront of mathematics education research. There is a growing literature in task design and implementation, including problem situations, exploratory methods, and activities to promote student learning (Anderson, 2003; Chapman, 2013; Clarke & Roche, 2010; Leung & Bolite-Frant, 2015). The type of task and the way it is used in the classroom context widely determines the quality of student learning. Tasks play an important role in organizing the teaching environments and act as mediators between the students and the knowledge presented in the learning environment. The tasks help in activating and controlling the learning environment and processes in order to facilitate effective and quality learning (Stein, Grover, & Henningsen, 1996). Besides, tasks stimulate students' reactions to the learning material, allowing them to deal with the topic intensively. When mathematical tasks are presented in the form of activities, opportunities emerge to help students develop skills such as mathematical thinking, reasoning, modeling and interpretation in the learning, teaching environment and processes of mathematics (Stein, Grover, & Henningsen, 1996).

Development of prospective mathematics teachers' skills of task design for effective teaching is an important goal in teacher education programs, given that mathematical tasks ''provide the stimulus

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for students to think about particular concepts and procedures, their connections with other mathematical ideas, and their applications to real-world contexts'' (National Council of Teachers of Mathematics [NCTM], 1991, p.24). Teachers' mathematical task knowledge for teaching (Chapman, 2013) appeared to be a major contributing factor in their choice of tasks in the classroom (Anderson, 2003). There is evidence that pre-service and in-service teacher training has a prominent role in the development of teacher task choice and task design capacities (Clarke & Roche, 2010). It is imperative that pre-service mathematics teachers have mathematical proficiency in the major mathematical domains; they are responsible to teach (NCTM, 2020). This proficiency needs to be demonstrated within mathematics as well as across other disciplines. Ability to design interdisciplinary instruction and to be engaged in interdisciplinary conversations are important elements of effective mathematics teaching (Association of Mathematics Teacher Educators [AMTE], 2017; NCTM, 2020). A mathematics teacher should be competent in how the knowledge of other disciplines are used in their mathematics teaching as well as how mathematics is used in other disciplines. In mathematics lessons, mathematics needs to be given the leading role within an interdisciplinary teaching approach. An interdisciplinary approach in teaching mathematics gives significant attention to the learning of mathematics and promotes the use of hands-on activities that link to real world problems (Ostler, 2012). A particular consideration in the development of pre-service mathematics teachers' ability to design an interdisciplinary mathematics lesson is that which topics can be taught in an interdisciplinary approach) so that students can have significant gains. There is a degree of suitability of the content taught for an interdisciplinary teaching for that the learning goals for teaching mathematics is sufficiently addressed (Ministry of National Education [MoNE], 2018; NCTM, 2020).

Our intention, in the present study, is to understand, in the eyes of the pre-service mathematics teachers, which parts of the mathematics curriculum are suitable to be used in an interdisciplinary approach. Thus, we aim to understand how much pre-service mathematics teachers can observe mathematical skills in tasks that require establishing links to other disciplines. This particular work is part of a bigger project supported by the Scientific Research Project Committee at Marmara University. Our wider focus, as defined in that study was to investigate the ways in which mathematics is taught in an interdisciplinary approach. In this particular study, we pay attention to the role of the tasks within this integration process. Trying to look at the issue from the eyes of the pre-service mathematics teachers, we intend to investigate two issues which lead to the following research questions:

1) What content domains and skills do pre-service mathematics teachers focus on when developing interdisciplinary tasks?

2) What are the views of pre-service mathematics teachers regarding the usefulness of the developed tasks in the mathematics teaching process?

With the answers to the research questions mentioned above, it will examine the views of pre-service mathematics teachers on the usefulness of two types of tasks in the STEM (an acronym for Science, Technology, Engineering, and Mathematics) field, who are future STEM content practitioners. In addition, it is aimed to fill the gap in the literature by focusing on the mathematical skills that are aimed to be developed in the integrated STEM curriculum.

1.1. Conceptual Framework

1.1.1. Mathematics in interdisciplinary approaches

How to apply interdisciplinary approach and how to adapt it to existing education systems is an important issue. Studies have shown that students are more motivated and perform better in mathematics when teachers use an interdisciplinary education approach (Becker & Park, 2011; Yıldırım & Altun, 2015). In their meta-analysis studies, Becker and Park (2011) explained that the integrated teaching approaches have positive effects on learning. This positive evidence from inside

the classroom revealed the importance of developing mathematics teachers' interdisciplinary teaching practices within the in-service and pre-service teacher training processes. The teacher education literature shows promising findings of the influence of programs or modules that are incorporated into the existing mathematics and science teaching curricula on pre-service teachers' readiness to use the interdisciplinary approach in the classroom. Bracey and Brooks (2013) asserted that the pre-service teachers' self-efficacy, interests and attitudes towards science were improved at the end of a collaborative program that aimed to increase the competence and skills of pre-service teachers in teaching concepts related to science, technology, engineering and mathematics. There were positive correlations between the perceptions of participant teachers about their integrated teaching competencies, their inquiry-based practices and feeling comfortable about integrated teaching (Nadelson, Seifert, Moll, & Coat, 2012). Likewise, at the end of the program that aimed to increase the engineering and design knowledge of teachers, the participant teachers improved their integrated teaching skills and continued to develop their skills (Pinnell et al., 2013). As a result of the practice of integrated approaches and engineering practices into teachers' science laboratory classes, Yıldırım and Altun (2015) found positive effects on student achievement. Çorlu, Capraro and Çorlu (2015) explored the mental readiness of pre-service teachers to facilitate integrated mathematics and science. Results indicated that pre-service mathematics teachers in the integrated teacher education program had more favorable attitudes towards integrated teaching of mathematics than pre-service mathematics teachers in the departmentalized program. After the integrated teaching focused workshop, pre-service science teachers were reported to have started to use technology and engineering besides mathematics in natural sciences teaching (Çınar, Pırasa, Uzun, & Erenler, 2016). In another study, the positive effect of a collaborative STEM education module on pre-service chemistry and mathematics teachers was reported (Aslan-Tutak, Akaygün, & Tezsezen, 2017). All these studies reveal that it is important to understand and develop the interdisciplinary relations of mathematics from the perspective of pre-service or in-services teachers.

The most agreed upon classification about different disciplines working together is the three level hierarchies which differentiates the level of cooperation with respect to the degree of interweave of the contributing disciplines. While solving a problem, multidisciplinary approach involves little interaction across disciplines in which each discipline contributes with their own viewpoint. In multidisciplinary approach component boundaries start to break down and disciplines work together in such a way that each discipline can affect the research output of the other. In transdisciplinary work, a holistic approach is formed in which the cooperation leads to the foundation of a new discipline (Niculescu, 1998). The multidisciplinary approach entered into educational research literature widely with the STEM education movement.

STEM education approach appears as a system that connects Science, Mathematics, Engineering and Technology with each other. In this system, students use engineering design, mathematical thinking and modelling, technological literacy and scientific inquiry skills in order to advance STEM-related studies (Topçu & Gökçe, 2018). According to Yıldırım (2018), in order for a study to be called STEM, it must include all four disciplines which have defined roles. The integration of the disciplines within the context of a complex real-life question, the problem of the level and visibility of mathematics may arise. That is, the role of mathematics is reduced to a computational tool. While some of the integrated teaching approaches used in mathematics teaching can be labelled as a "STEM education approach" (Çorlu, 2017), the fact that different interpretations of the "STEM education approach" were made in the fields of mathematics and science over time emerged as an issue. In terms of science education, while the classical definition does not cause a problem in classroom practices, this classical definition is restrictive for mathematics education (due to the restriction of the role assigned to mathematics).

We prefer to use the "interdisciplinary mathematics teaching approach" instead of "STEM education" for the approach used in this study, as; we believe that it fits better to our research purpose. According to Jacops (1989), interdisciplinary teaching is the deliberate coming together of more than one discipline in relation to a concept, phenomenon or problem which is compatible with the holistic natural thinking structure of human beings. Mathematics, used in interdisciplinary teaching is the centre of interest during its coexistence with other disciplines. That way, the role of mathematics cannot be limited to being used as a computational tool and the language provider. In interdisciplinary mathematics teaching, mathematics solves the multi-faceted real-life problems by establishing relationships with other disciplines with its own method, technique and knowledge, at the core. However, when it comes to STEM education, there are pre-defined for each of four components (e.g. engineering-oriented design processes are visible, technology plays its own part, mathematics feeds and connects these related disciplines by providing the "language" and computational support) (Topçu & Gökçe, 2018). Furthermore, while STEM education conceptually is limited to four disciplines, there is no such restriction in interdisciplinary approach. There is also no pre-acceptance about the central discipline in interdisciplinary teaching, and the discipline using this approach is at the forefront. For example, mathematics is at the centre in interdisciplinary teaching and that the other disciplines can have auxiliary roles.

1.1.2. Mathematics education and coding

Coding has become a basic requirement along with mathematics due to the need in today's digital world. In the many curricula worldwide, there is particular attention given to developing coding skills, with evidence of its influence on the skills of logical thinking and problem solving (Balanskat & Engelhardt, 2014). It is pointed out in the literature that coding education contributes to the development of many skills of students such as analysis, problem solving, generalization, and algorithmic thinking (Michael & Omolove, 2014). In mediums that can be coded with ready-made code blocks such as Scratch, students can design their own games and animations. Along with the algorithmic thinking and number pattern knowledge required in coding, it has brought the idea that "may coding approach be used to support mathematics teaching?" There are various studies showing that coding education contributes to mathematics education in cognitive and/or affective sense (Balanskat & Engelhardt, 2014; Forsström & Kaufmann, 2018; Lewis & Shah, 2012; Özdemir, Sevimli, Aydın, & Derin, 2018; Taylor, Harlow, & Forret, 2010). In their study, Lewis and Shah (2012) revealed that coding motivates students positively when studying mathematics and positively affects academic performance. Similarly, it has been shown that coding has positive effects on students with weak mathematical thinking skills (Taylor et al., 2010). Forsström and Kaufmann (2018) found that coding has positive effects on student motivation, mathematics performance, the cooperation between students, and the role of the teacher in learning mathematics. Özdemir, Sevimli, Aydın and Derin (2018) observed in their study with pre-service mathematics teachers that the participants defined their coding tasks as a visualization tool that can concretize algebraic expressions in mathematics courses. There is evidence that the skill of coding contributes to the learning of mathematics (Aydın, Sevimli, Özdemir & Derin, 2019). For example, it was used to enhance the understanding of the concepts of applied mathematics such as algorithm, iteration, and variable. With coding programs, students can make some abstract mathematical concepts visible. Students learn such concepts better by turning mathematical ideas into games and animations (Gadanidis, 2015). As well as accustoming students to coding, the purpose of using mediums such as Scratch in class may be the development of other skills such as analysis, algorithmic thinking, concretization, and computational thinking skills rather than teaching the coding itself (Calao, Moreno-León, Correa, & Robles, 2015).

Since the positive effect of coding on mathematics teaching and 21st century skills are supported by research, coding contents have become more visible in K-12 curriculum. Sayın and Seferoğlu (2016) noted in their study that some countries that add coding to their curriculum (eg:

England, Finland, and Australia) set it out on the grounds of "supporting logical thinking" and "supporting problem solving". In another study, Hubwieser et al. (2015) investigated the objectives of countries for including coding in their curriculum by examining not only Europe but a wider geography. It can be observed in this study that there is a direct or indirect relationship between mathematical skills and coding. Although there are various recommendations for disciplines where coding is useable, there is little consensus on how to include coding in the school curriculum or whether it should be integrated into the curriculum (Grover & Pea, 2013). For example, England, Denmark and Sweden have integrated coding into mathematics but further discussion is needed on how programming could be linked to other subject areas and to what extent it would affect students' performance (Bråting & Kilhamn, 2022). Along with the integration type in the curriculum (in which course and with which learning outcomes), the evaluation of coding in terms of teaching practice is also an important need. The present study is important in that it extends our knowledge about pre-service mathematics teachers' task type choices (building and coding) and task design practices in terms of interdisciplinary approaches.

2. METHOD

The case study design was used to evaluate the process of the participants in a specific learning environment in depth. This research was conducted with 28 pre-service mathematics teachers studying at a mathematics education department in a state university in Turkey by purposeful sampling. Participants had high class participation with teamwork and they were involved in teaching practice in secondary schools. Besides, participants have been selected from among pre-service teachers who took the "interdisciplinary mathematics teaching" elective course at higher education level. During the autumn semester of the 2018-2019 academic years, the participants were faced with modeling tasks under this course in the mathematics laboratory. We considered this as an opportunity to investigate our research question.

2.1. Interdisciplinary Mathematics Teaching Course

The aim of this higher education level course is to explain how to improve 21st-century skills theoretically and practically by associating mathematics disciplines' learning outcomes with other disciplines in mathematics teacher training program. Two hours every week, the course lasted for 16 weeks and participants spent 32 hours in this course during a semester. The course consists of four stages. During the course, a problem-based teaching approach has been used and the considered process has been expressed in Table 1.

Table 1. Interdisciplinary mathematics teaching course stages

Number and hour	Stage name	Stage content
1st Stage: 8 hours	Modeling task	Ferris wheel problem Real estate problem Parking lot problem Paper bridge problem
2nd Stage: 8 hours	Building tasks	Propeller and gear system Bridge problem Crane problem Ferris wheel problem
3rd Stage: 8 hours	Coding tasks	Mblock training Microbit training Scratch training
4th Stage: 8 hours	Task development	Preparation and presentation of lesson plans

In the first stage of the course, participants have been asked to solve the problems given by using the mathematical modeling approach with paper and pencil. It was aimed to contribute to the mathematical modeling skills of prospective teachers in this way. Thus, students were encouraged to

use hands-off mathematical modelling tasks in preparation for the next stage in which hands-on STEM building tasks were used.

In the second stage of the course, participants were introduced to the tasks developed using mechanical STEM building sets (plug-in parts). Hence, the transition from paper and pencil-based problems to applied problems using engineering building blocks sets has been made. Building blocks engineering sets and tasks used in applied problems are the following: Propeller and gear system (static sets), bridge problem (static sets), crane problem (dynamic sets), Ferris wheel problem (dynamic sets) and wind turbine problem (robotic sets). Fischertechnik sets and similar sets are used in the studies conducted in the context of interdisciplinary mathematics teaching (Özdemir et al., 2018; Yıldırım & Altun, 2015). These tasks include quantitative reasoning, problem-and-project based learning.

In the third stage of the course, participants who have not learned any coding language before have been trained to use programming languages such as Microbit, Mblock and Scratch. The reason for choosing these coding languages has been the consideration that they will contribute to the building of algorithmic thinking skills. In addition, the fact that these programming languages are widespread throughout the world, they are easy to use, they are suitable for student levels and they are offered free of charge to everyone, has been an important factor in the selection of these programs.

In the last stage of the course, students have been asked to prepare and present task-based lesson plans in light of what they have learned during the whole course process. Tasks developed by using mechanical STEM building sets are coded as building tasks. The coding task is defined as a task in which students are required to use coding software.

2.2. Data Collection Tools and Analysis

Research data were collected from two sources, which are lesson plans and interviews. After the "interdisciplinary mathematics teaching" course, participants were expected to develop two types of tasks (building and coding tasks). Thereafter, participants were asked to present these tasks in lesson plans. During preparation of lesson plan, the researchers divided the class into groups of four, and the participants have been expected to develop a building and a coding task that could be used in mathematics education using the materials included in the STEM building sets and using Scratch, respectively. Data in lesson plans were analyzed through content analysis technique. The lesson plans content were analyzed with respect to the two predefined themes such as content domains and mathematical skills.

While classifying according to the content domain, the categorization made by The Trends in International Mathematics and Science Study (TIMSS) in 2019 was used (Mullis, Martin, Foy, Kelly & Fishbein, 2020). According to this categorization, 8th-grade mathematics contents consist of the following four domains (and topics): "Number" domain (integers, fractions, decimals, ratio, proportion, and percent), "Algebra" domain (expressions, operations, equations, relationships, and functions), "Geometry" domain (geometric shapes and measurements), and "Data and Probability" domain (data display and probability). After the tasks developed by the participants were classified according to the content domain, the compatibility of each task with the curriculum was evaluated. In the evaluation process, all participants scored each task between 1 and 5 points (1 = totally incompatible -- 5 = totally compatible) according to the criteria of being compatible with the learning outcomes in the mathematics curriculum, and the average of all scores for each content domain was calculated in percentage. In the categorization process of mathematical skills, the skills highlighted in the secondary school level of mathematics curriculum in Turkey were taken as reference (MoNE, 2018). Thus, the tasks in the lesson plans were coded under categories such as algorithmic thinking, modeling, reasoning, and visualization in terms of the mathematical skills to be achieved. After determining the content domain and mathematical skills that the tasks included, tasks were analyzed descriptively in terms of frequency and percentage.

The second source of data was the views of the participants, which were collected through the semi-structured interviews. Some of the participants were selected by means of purposeful sampling technique and the points that were taken into consideration during the preparation of the lesson plans were analyzed more deeply. Excerpts from participants' views were used to support the trends revealed from the lesson plans. The data came from the interviews which were collected as part of formative assessments of the course. The tasks in the course presented a fruitful opportunity in that regard.

2.3. Validity and Reliability

The validity and reliability processes in the present study were provided by long-term interaction with the participants, coding the data by inter-raters, and benefitting from the categorization framework of the institutions (MoNE, 2018; Mullis et al., 2020) in data analysis. Incorporation of the data from two data sources (i.e. the lesson plans and the questionnaire), have been the primary precaution to increase the validity of the findings. The analysis of the validity of the questionnaire data was carried out by the independent controls of four researchers. They evaluated the questions in the questionnaire for correct comprehensibility. Data analyzes were done collaboratively by the authors. Data from each of the lesson plans that were analyzed by one of the researchers was checked by another researcher to prevent possible misinterpretations. The randomly selected 9 lesson plans were coded by two more external raters (mathematics teachers), and between these and the authors' encodings, a consistency between 85% and 94% was found. The codes that did not reach a common understanding among the external raters were reviewed together by the researchers and a consensus was reached. For example, one rater referred to modeling and another rater referred to reasoning as the mathematical skill to be developed in Task-18. After the meeting of the researchers, it was evaluated that this code could be included in both categories. Since the opinions on compatibility with the curriculum were obtained directly from the participants, there was no problem in terms of coding accuracy.

3. FINDINGS

Findings obtained through the analysis of lesson plans focused on building and coding tasks developed by the participants are presented under two headings: content domains in developed tasks and mathematical skills in developed tasks. As a result of supporting these findings with the interview data carried out with the participants, views regarding the usefulness of building and coding tasks in the learning-teaching process were determined and presented under the heading "the usefulness of the tasks in the teaching process".

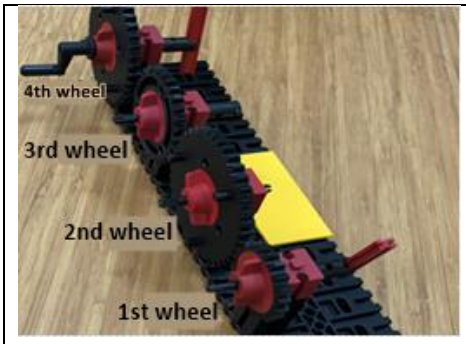
3.1. Content Domains in Developed Tasks

Each participant has prepared a lesson plan for each type of tasks (building and coding) for applying these tasks to one of the content domains at the secondary school mathematics level. All developed tasks have been examined and the findings that show the distribution of tasks by content domain have been presented in Table 2. It was found that in lesson plans focused on building task, half of the participants ($f = 14$) developed tasks for "Numbers" content domain, followed by "Data and Probability" (29%) and Geometry" (21%) domains, respectively. One of the remarkable findings has been the fact that none of the lesson plans prepared by the participants included any building task for algebra content domain. It was observed that the participants who prepared a lesson plan focused on coding task preferred the content for geometry content domain more frequently (71%). Another content domain that has been used more frequently after the "Geometry" content domain among coding tasks has been algebra (21%). It is noteworthy that for the "Numbers" and the "Data and Probability" content domain, being one for each, only two coding tasks have been developed.

Table 2. Distribution of tasks by content domain and curriculum integration

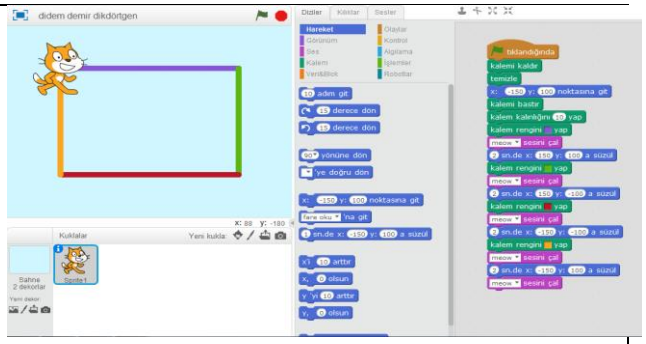
Content domain		Number of tasks		Compatibility with the curriculum
		f	%	%
Building tasks	Numbers	14	50	73
	Algebra	-	-	-
	Geometry	6	21	56
	Data and Probability	8	29	51
Coding tasks	Numbers	1	4	65
	Algebra	6	21	53
	Geometry	20	71	87
	Data and Probability	1	4	48

After the developed tasks were classified according to the content domain, each participant was expected to evaluate each task in compatibility with the curriculum integration. It was observed that some of the task types used in lesson plans were preferred more frequently for some content domains. According to this, the participants evaluated building tasks in numbers content domain more useful for achieving learning outcomes in curriculum (73%). Approximately half of the participants do not have a positive opinion on the integration of building tasks developed in other content domains into the curriculum. In addition, coding tasks were found more useful for achieving learning outcomes in the geometry content domain. In this regard, 83% of the participants stated that the coding tasks in the geometry domain could be integrated with the curriculum.

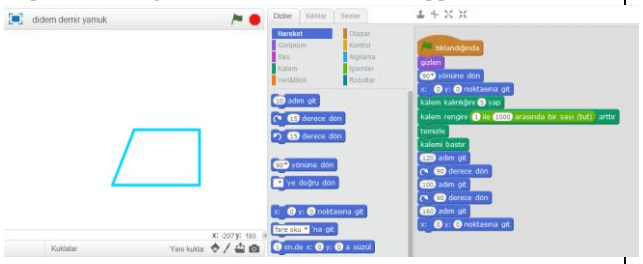


Create a wheel system that satisfies the conditions given below and is compatible with the model in the picture. When the first wheel turns 4 full turns, the fourth wheel turns 1 full and a half turn,
-Compare the number of laps of the wheels.
-Find the radii of the wheels.
-Compare the direction and speed of the wheels.

Building task



Interpret the edge-angle differences between the square and trapezoid through the codes in the Scratch application.



Coding task

Figure 1. The building and coding task of participant-4

In building tasks-based lesson plans, more than half of the participants (nine of the 14 participants) who prepared suitable content for the numbers content domain prepared content for the teaching of the ratio and proportion subject using wheel systems of simple machines. One of the tasks that Participant-4 developed is given in Figure 1. It aims to express the relationship between two multiplicities that are directly proportional and inversely proportional with the help of the number of turns and direction of rotation of the wheels of different radii. For the geometry, Participant-4 used

coding tasks to compare the properties of triangles or quadrilaterals and to show their hierarchical relationships by experiencing. One of the tasks utilized in this context is presented in Figure 1.

3.2. Mathematical Skills in Developed Tasks

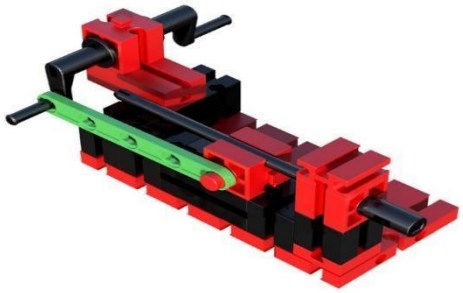
When the content analysis performed on the course plan has been evaluated in the context of the mathematical skills dimension, it has been determined that the mathematical skills that have been targeted to be developed with the use of building tasks have been modeling (75%), reasoning (57%) and visualization (39%) (Table 3). In building tasks developed with static sets, the modeling process has often been handled over the GCD-LCM topic by comparing the number of rotations of the wheels from simple machines in a system. In building tasks, it has been observed that proportional reasoning ability, which means instant change or rate of change of one quantity over another, has mostly been treated on ratio and proportion subject.

Table 3. Distribution of tasks in terms of targeted skills

Mathematical skills	Building tasks		Coding tasks	
	f	%	*f*	%
Algorithmic thinking	9	32	19	68
Modelling	21	75	8	29
Reasoning	16	57	8	29
Visualization	11	39	12	43
Arithmetic	6	21	6	21

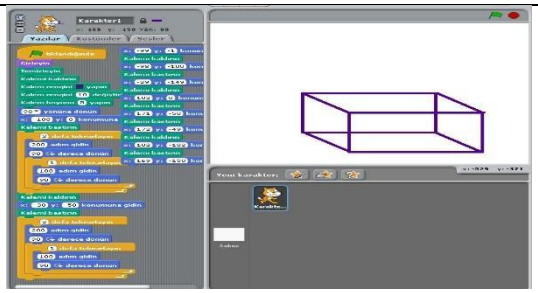
The reflections of rotational movement in visual-spatial perception such as translation, rotation and symmetry have been included in 39% of the lesson plans developed within building tasks. For example, tasks to show how the new position and shape of the largest wheel change according to the number of rotations in the smallest wheel on visual perception have been presented in the lesson plans. It was determined that tasks involving arithmetic and algorithmic skills (e.g. GCD-LCM calculation or pattern finding) have been relatively limited in the lesson plans prepared by the participants (Table 3).

In the lesson plan presented in Figure 2, a task example including modeling and visualization skills that aims to help the students discover the relationship between the rotational movement and linear motion, and the model is presented. In this lesson plan, it is seen that the real-life problems related to science are expressed with mathematical models and transferred to the lesson plans with the number of rotations in the arm, the length of the arm and the change in the bar length (Figure 2). Approximately two-thirds of the participants stated that students could develop their algorithmic thinking skills through coding tasks in their lesson plans (68%). In lesson plans that require the ability to think algorithmically, tasks such as movement, rotation, and finding a location according to the axis of symmetry to enable students to go to the positions specified on the coordinate plane by adding conditions and loops to the block-based codes are included. In some tasks that require algorithmic thinking, sub-applications that require computing or visualization skills have been placed with the "conditions" option on block-based coding, thus the content that requires more than one mathematical thinking skills has been included in them. For example, in the coding task given in Figure 2, the participant-13 targeted to develop algorithmic thinking and visualization skills. Almost half of the participants have described their coding tasks as a means of visualization that can be embodied in algebraic expressions (43%) (Table 3).



This system converts the rotary motion into linear motion.
i) Formulate the relationship between one full turn of the arm and the movement of the red piece on the black bar.
ii) Determine the position of the arm on the hoop if the bar was to be extended by two inches,

Building task



Considering the above coding made to form a rectangular prism,
i) Develop a program that finds the number of surfaces.
ii) Develop a program that finds the surface area.

Coding task

Figure 2. The building and coding task of participant-13

When the task types were compared, it was observed that while in building tasks modeling was more reflected, algorithmic thinking skills were more focused on coding tasks. It was determined that visualization skills were preferred in similar proportions and frequently in both types of tasks while less attention was paid to arithmetic skills. While more than one mathematical skill was included in 21 of the building tasks in the lesson plan, at least two mathematical skills have been referred to in 15 of the lesson plans designed according to coding tasks. In this context, it was determined that building tasks have been more frequently associated with more than one skill compared to coding tasks.

4.3. Participants' Views on the Usefulness of the Tasks

Participants have been expected to evaluate the tasks they developed in terms of usefulness in mathematics classes after their experience in interdisciplinary teaching practices and coding teaching practices. In this sense, the tasks developed by the participants have been subjected to the self-evaluation and peer-evaluation process, thus each task has been evaluated by at least two participants. Participants' views on the usability of building and coding tasks in classroom practice are presented as a percentage in the four-level (never-rarely-sometimes-always) category in Figure 3.

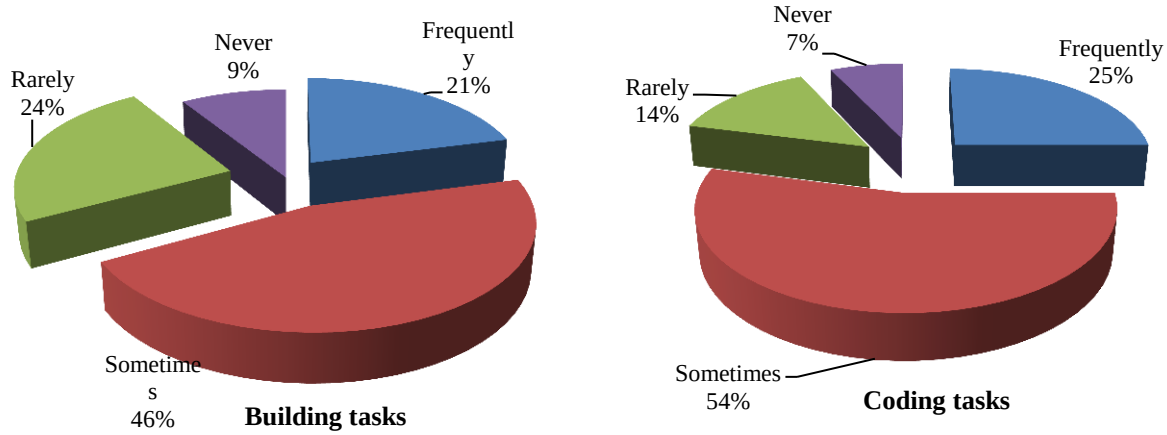


Figure 3. Participants' views on the usefulness of the tasks in the teaching process

When comparing the usefulness of the tasks in the teaching process, building tasks have been evaluated as always usable in the classroom environment by 21% of the participants, while 46% have been evaluated as sometimes. Participants who claimed they were rarely usable, or they will not use it made up one-third of all participants. When the coding tasks have been examined, one-fourth of the participants evaluated such tasks in the always usable category in classroom practice. More than half of the participants stated that they can sometimes benefit from coding tasks. When two types of tasks

were compared, it was seen that coding tasks have been found more useful by the participants compared to building tasks. The number of participants indicating that they will use coding tasks always or sometimes is seven more than the number of participants who stated that they will use building tasks for the same categories. It was observed that in both building and coding tasks, a more significant part of the participants found the tasks sometimes usable and the number of participants who thought that both types of the tasks were always usable was few.

Participants were also asked to evaluate the tasks they developed in terms of their usefulness and limitations in mathematics class. Participants emphasized that especially coding tasks are useful since they offer the opportunity to learn math by gamification *(f = 16)*. Expressing that the students can solve their math problems as if they were preparing a game program, the participant-5 claimed in the interview findings that with these tasks, students can improve the quality of the time they spend at the computer on a daily routine. The most striking point made considering the limitation of coding tasks was the difficulty in finding the appropriate task for each topic *(f = 14)*. Following is a quotation from a participant that exemplifies the above argument.

> ***Participant-5****: Today's students plan even their social lives on computer. The presentation of mathematics to students with a game culture generally overlaps with their real-life practices… Trying to embed the learning outcomes within the tasks can be quite difficult. In particular, developing such tasks for each mathematical concept can adversely affect usefulness.*

The most common view for the advantage of building tasks has been the tasks offering opportunities for mathematical modeling *(f = 10).* One of the interview sections exemplifying this advantage is presented below. Participant-2 stated that building task will contribute positively to visualization as well as modeling skills. The most notable view for the limitation of building tasks in mathematics courses which more than half of the participants agree with has been the need for material installation knowledge and the sets not being economical *(f = 15)*. In addition, the lack of mathematical skills being visible enough might have made the participants feel reluctant to use building tasks.

> ***Participants-2****: The situation in which students have the most difficulty in secondary school mathematics is the crisis they experience in the process of transitioning from real-world models to abstract mathematical models, and interdisciplinary approaches can be useful against this issue. If I evaluate the building tasks that I have encountered so far, I can say that mathematics is far behind, and the subjects are mostly related to science.*

4. DISCUSSION AND CONCLUSION

Findings obtained from the study have been discussed under two headings: the characteristic of developed tasks by participants (via curriculum integration) and participants' views on the usefulness of tasks in the teaching process (via participating of interdisciplinary mathematics teaching course). When the lesson plans developed by the participants were evaluated in terms of content domain, it was determined that the participants found building tasks more useful in numbers domain and coding tasks in geometry domain. The reason why compliance with the curriculum integration varies according to task types may be related to the participants generating tasks on limited subjects. When the lesson plans were analyzed in detail, it was found that the aim was to help students comprehend the ratio and proportion subject and achieve proportional reasoning skills within the framework of building task. This finding shows that the skills (proportional reasoning) that will help the learning process in the selected content domains (ratio and proportion) have been preferred more frequently in lesson plans. In this sense, the compatibility of the subject and the skill may have led to the building tasks to be more associated with the numbers content domain. Besides, geometry content domain was preferred frequently when developing coding tasks and algorithmic thinking skills often cited in these tasks

rather than visual-spatial skills. Although geometry content domain is preferred in coding tasks, Francis and Davis (2018) found a strong relationship between coding with arithmetic and multiplication in their study. In the study, children aged 9 and 10 were asked to write codes to move the Lego robots. It was reported that the transition of children from additive to multiplicative correlations was strongly supported in this process. In this case, the computational thinking skills of students can be developed by designing tasks that support similar learning outcomes (Aydın, et.al., 2019; Grover & Pea, 2013; Taylor, Harlow, & Forret 2010). While the rationale of countries such as England, Finland and Australia that add coding to curricula is to support logical thinking and problem solving, these justifications overlap with the findings of the study (Sayın & Senemoğlu, 2016), because it was stated in the interview findings obtained from the participants that coding tasks such as writing code or creating appropriate commands could be used mostly to solve mathematical problems.

When the findings regarding the usability of building and coding tasks in classroom practice are examined, the fact that a significant number of participants found both tasks sometimes usable suggests that participants are distant from using these tasks in the course. Similar inferences were encountered in the findings of the interview. Failure of participants to find building and coding tasks useable can be explained mainly by two situations. Firstly, pre-service teachers might have considered negative factors such as the technological-pedagogical knowledge, course hours, and the infrastructure of schools for applying such tasks. The material and pedagogical knowledge of the participants can be considered as a source of influence in building resistance to the usability of such tasks in the classroom practice (Sevimli & Ünal, 2020). For this reason, the participants have more positive opinions about the integration of coding tasks into the curriculum, which require less material knowledge compared to building tasks. If mathematics discipline is less visible in tasks carried out with STEM sets and science subjects are more prominent in these tasks, then the participants may have negative beliefs related to the integration of the tasks into the curriculum. Moreover, participants find it hard to develop appropriate tasks for each learning outcomes in curriculum. As a result, the participants are more distant from building tasks, than they are from the coding tasks. However, here, pre-service teachers need to be encouraged to use mathematical modeling as a bridge to integrate STEM tasks into their courses and see and use mathematical modeling and STEM tasks as complementary partners (Blum & Ferri, 2009; Özdemir, Sevimli, Aydın, & Derin, 2018). According to English (2015), while mathematics education provides foundational content and processes that bridge the STEM disciplines, the difficulty of mathematics educators is not being aware of these contributions. Secondly, the teaching process may also have influenced participant views. Although the content prioritizing the integration of mathematics with the interdisciplinary approach was presented to the participants in the course (interdisciplinary mathematics teaching course) provided within the scope of this study, the outcomes of the course included in the particular time may have been limited. It is also expected that the participant group in which the study was conducted would be more open to innovations since they are pre-service teachers. In this context, it may be necessary to plan the mathematical infrastructure and nature of the contents carefully, considering that more experienced teachers with teaching habits will show more resistance in such practices. Undoubtedly, the predictions that researchers make between teaching experience and resistance to change are in need of confirmation, and at this point, a similar study is suggested to be carried out with in-service teachers.

The study showed attitudes of pre-service teachers while preparing their lesson plans differ with respect to their choice of the task type (building tasks vs. coding tasks). Pre-service teachers tend to use the “numbers” content domain in building tasks and “geometry” content domain in coding tasks more frequently. In addition, compared to coding tasks, pre-service mathematics teachers associated building tasks with mathematical skills more while preferring building tasks in the development of mathematical modeling skills and coding tasks in the development of algorithmic thinking skills.

Nevertheless, pre-service mathematics teachers found coding tasks more useful into curriculum integration compared to building tasks. According to the pre-service mathematics teachers, building tasks can be integrated curriculum to achieve modeling real-life problems, while the limitation of them is the need for knowledge of material installation and the high cost of the sets. In addition to this, the interview results pointed out that the advantage of coding tasks in mathematics classes is teaching with games while the limitation is the difficulty of developing task compatible with every subject for teaching.

As a result of the study, considering the limitations of the building tasks with the sets (high costs and the need for the installation knowledge), it is thought that teachers would use these tasks more in mathematics classes if the STEM sets were easily accessible and carried out with the equipment in the classroom environment. We think that pre-service or in-service training, which focuses on various subjects and mathematical skills that can be used in classroom practice, may positively affect the views of the instructors. Since this study was carried out with pre-service teachers, it is wondered what the results of a study would be with a similar research focus conducted with in-service teachers with different teaching experiences. In addition, in this study, two different teaching situations carried out using static sets and coding training were compared with each other and the combined effect of these two situations in cycles was not included. In this context, a study evaluating pre-service or in-services teachers' opinions about the effectiveness of a teaching process that will be developed using dynamic or robotic sets will contribute to the literature.

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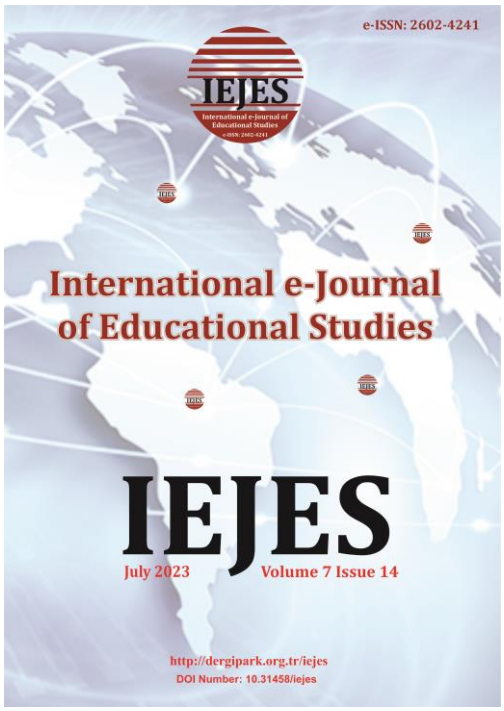

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Abstract

This study aims to analyze the impact of collaborative testing of students' cognitive and affective learning outcomes in learning algebra in mathematics education. The sample of the study was 33 students of 6th grade. The mixed method approach was employed, using both quantitative and qualitative data collection techniques. Data collection instruments included (a) exams consisting of open-ended questions developed by the researchers to test student attainments in algebra (Algebra Attainment Test), (b) Mathematical Attitudes Scale aiming to determine student attitudes towards math lessons, (c) Exam Anxiety Inventory aiming to determine student exam anxiety levels, and (d) interviews aiming to determine students' opinions on collaborative testing. According to the analysis of the quantitative data, it was determined that the experimental group's mean score on the algebra attainment test was higher than the control group. But it was not statistically significant. Furthermore in the total mean score of the exam anxiety was found a decrease in the experimental group but it was not significant. However, it was determined that there was a significant difference between the attitudes of the students in the experimental group towards mathematics. The analysis of the qualitative study data revealed that students' views were both positive and negative on the "cognitive", "affective", "social" and "suggestions" themes about collaborative testing. As a result of the research, we evaluated the effectiveness of collaborative testing in the form of group work based on assessment activities. At the same time, we presented the advantages and disadvantages of the technique and discussed its usability as an alternative assessment technique.

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Research Article

Collaborative Testing as an Alternative Assessment Technique in Algebra Education *

Selcen ÇALIK UZUN [1] **Sedef ÇELİK DEMİRCİ** [2]

Abstract

This study aims to analyze the impact of collaborative testing of students' cognitive and affective learning outcomes in learning algebra in mathematics education. The sample of the study was 33 students of 6th grade. The mixed method approach was employed, using both quantitative and qualitative data collection techniques. Data collection instruments included (a) exams consisting of open-ended questions developed by the researchers to test student attainments in algebra (Algebra Attainment Test), (b) Mathematical Attitudes Scale aiming to determine student attitudes towards math lessons, (c) Exam Anxiety Inventory aiming to determine student exam anxiety levels, and (d) interviews aiming to determine students' opinions on collaborative testing. According to the analysis of the quantitative data, it was determined that the experimental group's mean score on the algebra attainment test was higher than the control group. But it was not statistically significant. Furthermore in the total mean score of the exam anxiety was found a decrease in the experimental group but it was not significant. However, it was determined that there was a significant difference between the attitudes of the students in the experimental group towards mathematics. The analysis of the qualitative study data revealed that students' views were both positive and negative on the "cognitive", "affective", "social" and "suggestions" themes about collaborative testing. As a result of the research, we evaluated the effectiveness of collaborative testing in the form of group work based on assessment activities. At the same time, we presented the advantages and disadvantages of the technique and discussed its usability as an alternative assessment technique.

Keywords: Alternative measurement and assessment, collaborative testing, algebra learning domain, cognitive learning affective learning

1. INTRODUCTION

Measurement and assessment is a significant element in curricula. It is known that in traditional curricula, measurement and assessment activities aim to measure knowledge-based attainment of students with exam questions (Kuran & Kanatlı, 2010). In traditional measurement and assessment, answers to a series of questions are evaluated within a certain timeframe, and learning experiences are neglected (Anderson, 1998). The reason is that traditional methods assess student attainment as separate from the instruction process and prioritize outcomes (Gelbal & Kelecioğlu, 2007). In other words, as traditional testing focuses on the assessment of final learning outcomes, an evaluation of learning experiences are often ignored (Baki & Birgin, 2004; Çoruhlu, Nas & Çepni, 2009). Cansız-Aktaş (2018) underlines that during the assessment phase of learning the student's effort, that is, the process, should be taken into consideration in the production of this product, as well as the product produced by the student. Developments in epistemol ogical theories introduced new measurement and assessment approaches in learning (Baki & Birgin, 2002). Alternative measurement and assessment

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approaches contribute to student learning through feedback mechanisms on the progress and challenges experienced by students, in addition to grading (Karamustafaoğlu, Çağlak, & Meşeci, 2012). Thus, to be able to determine any challenges to learning, assessment methods such as experiments, presentations, exhibitions, projects, discussions, observation, interviews, portfolios, self-assessment and peer assessment, should also be conducted in addition to written tests/exams (Toptaş, 2011). The fact that alternative measurement and assessment approaches allow the analysis of skills and attitudes, as well as knowledge (Çalışkan & Kaşıkçı, 2010) increasing its significance (Baki & Birgin, 2004; Duban & Küçükyılmaz, 2008; Gelbal & Kelecioğlu, 2007).

In recent years, collaborative testing came to the fore as one of the alternative measurement and assessment approaches. In learning activities conducted as groupwork, students are actively involved in the process of construction of knowledge (Quarstein & Peterson 2001). In the group exam technique, it is possible to ensure that students are involved in assessment activities in the form of group work, and to allow them to work together in the process of answering the questions. By doing so, in addition to assessing learning outcomes resulting from the activities they complete together with their peers, it will also be possible to assess throughout the learning process. More detailed information about Collaborative Testing is given below.

1.1. Collaborative Testing

Collaborative testing entails solving the exam questions with collaboration between the students (Lusk & Conklin, 2003). Collaborative testing was also called the two-stage testing (Hendricson, Brady, & Algozzine, 1987) or pyramid testing (Yuretich, Khan, Leckie, & Clement, 2001) in different researches. There are a variety of approaches in regard to the practice of collaborative testing to be found in the literature. The most common approach was for students to take individual exams after the collaborative test, or vice versa (Breedlove, Burkett, & Winfield, 2007; Lusk & Conklin, 2003; Zipp, 2007). Another method proposes to allow students to take the same test twice, first individually and then as a group (Giuliodori, Lujan, & DiCarlo 2008; Ioannou & Artino, 2010; Rao, Collins, & DiCarlo, 2002).

A review of the literature on collaborative testing found that studies revealed the impact of this method on student learning (Breedlove et al., 2007; Bloom, 2009; Guiliodori et al., 2008; Muir & Tracy, 1999; Zimbardo, Butler, & Wolfe, 2003; Zipp, 2007). Researchers (Hodges, 2004; Giuliodori et al., 2008; Zipp, 2007) indicated that collaborative testing was one of the methods that could be employed in the learning and instruction and argued that the technique could be used in the construction of cognitive knowledge, as well as assessment. Zimbardo et al. (2003) claimed that students who were tested collaboratively achieved higher success when compared to individual tests. Thus, the implementation of the collaborative testing in learning areas where students experience difficulties could improve the recognition of the attainments in the learning area. Thus, algebra, as one of the difficult learning topic areas, was selected in the current study. Collaborative testing leads to an improvement in interaction among the students (Giraud, 1997; Ioannou & Artino, 2010; Keller & Steinhorst, 1995; Magel, 1998), allowing the discussion of the difficult-to-understand areas of attainment in algebra. Furthermore, it is suggested that acquisitions induced by the feedback provided in collaborative testing would positively reflect on the individual test/exam performances to be administered later on (Mahoney & Harris-Reeves, 2019).

In addition to the learning outcomes created by students, an important stage is to assess how performance is affected by perception during a group exam and how behaviors affect exam performance. Exam anxiety, which is significant among these behaviors, is described as the emotional state that leads to stress in the individual during assessment activities, preventing the real performance of the individual (Spielberger, 1995). Exam anxiety can cause some negative situations such as fear or anxiety and not being able to experience the exam process as desired (Schutz, Distefano, Benson, &

Davis 2004). Exam anxiety tends to weaken students' abilities to successfully sit exams and, ultimately, their overall grades (Cantwell, Sousou, Jadotte, Pierce, & Akioyamen, 2017). In Türkiye, many students develop negative attitudes towards mathematics lessons based on the idea that mathematics is difficult after the primary education, which leads to exam anxiety in mathematics. This situation leads to exam anxiety in the context of mathematics lessons (Dursun & Bindak, 2011; Yenilmez, Girginer, & Uzun, 2007). Several studies reported on the positive impact of collaborative testing on exam anxiety. Breedlove et al. (2007) reported positive outcomes of collaborative testing, which improved student achievements by reducing student stress and anxiety. Collaborative testing allows students to share or affirm their answers by other students in the group, thereby reducing anxiety and facilitate the recall of knowledge, thus leading to higher grades (Mitchell & Melton, 2003). Other studies reported that students participating in collaborative tests exhibited lower anxiety levels during learning in the classroom setting and also exams (Lusk & Conklin, 2003). In fact, it is known that students experience more exam anxiety in challenging learning areas, such as algebra (Reyes & Castillo, 2015). An examination of students' attitudes towards learning algebra should also be undertaken. In fact, Çalık-Uzun and Birişçi (2018) found that students' motivation to participate in class activities increased with the collaborative testing technique in mathematics. In this study, it is thought that the use of collaborative testing in the field of algebra learning will contribute to the field area.

It is known that other types of attitudes towards subjects that develop during learning activities in lessons also develop. Findings reported by studies conducted on student attitudes reported that students developed positive attitudes after collaborative testing processes (Giraud & Enders, 2000; Ioannou & Artino, 2010). Further, Slusser and Erickson (2006) reported that collaborative testing practices affected student attitudes towards the subject/lesson, increasing motivation.

1.2. The Purpose of the Study

The relevant literature review revealed several studies on the effectiveness of the cooperative learning strategies. However, in Türkiye the number of studies on collaborative testing (which is frequently employed in cooperative learning) is limited, and there are only a few studies on collaborative testing practices in the construction and evaluation of knowledge. Çalık-Uzun and Birişçi (2018) investigated the teacher and student views on collaborative measurement and reported that teachers and students had positive views on collaborative testing; it was found that collaborative testing increases their motivation for participation in the lesson. In this study, in addition to teacher and student opinions, it is aimed to examine the cognitive and affective learning outcomes with the collaborative testing technique. When the studies conducted regarding the collaborative testing technique in the literature are examined, it is seen that the collaborative testing technique is mostly discussed in terms of its contribution to learning (Lusk & Conklin, 2003; Rao et al., 2002). Therefore, it is thought that this study, in which the effect of the collaborative testing technique on cognitive and affective learning outcomes will be investigated, is more comprehensive. On the other hand, a study that examined the collaborative testing technique in terms of exam anxiety, interaction between groups, etc. was conducted in the statistics lesson (Kapitanoff & Pandey, 2018). However, this study will be conducted on learning outcomes in algebra in lower secondary education. Therefore, it is thought that this study that implements collaborative testing will provide a different perspective to the evaluation of the objectives in the field of algebra learning, which is quite abstract for lower secondary students. It was suggested that the implementation of both individual and collaborative tests would be an alternative to both formative and complementary activities. Thus, collaborative testing could be an alternative to measurement and assessment activities. It was suggested that this technique, which is quite different from traditional assessment techniques, would lead to cognitive and permanent learning, and ensure active student participation. Furthermore, the interaction between the group

student members and the student during the test would contribute to student attitudes towards the subject and the topic and reduce student anxiety. The collaborative testing allows the students to learn within a discussion environment. Thus, collaborative testing as an alternative measurement and assessment method would also provide information on the learning process. Therefore, the main research problem was determined as follows: "*Does collaborative testing affect students' cognitive and affective learning outcomes in algebra?*" Therefore, the study aimed to investigate the impact of the collaborative testing activities on cognitive and affective learning in the 6th grade mathematics subject in algebra lessons. The cognitive learning of the students was limited to their academic performance, and affective learning was limited to student attitudes and anxiety. Thus, responses to the following sub-problems were sought:

1. What is the effect of collaborative testing on students' academic performance in algebra?
2. What is the effect of collaborative testing on affective learning?
   a) Is there any effect of collaborative testing on students' exam anxiety?
   b) Is there any effect of collaborative testing on students' attitudes towards mathematics?
3. What are the students' views on the collaborative testing process?

2. METHOD

2.1. Research Design

The present study aimed to investigate the impact of collaborative testing on the students' cognitive and affective learning outcomes. The mixed method approach was employed to determine the effects of collaborative testing on the academic achievement, attitudes and exam anxiety levels of students. Plano Clark and Creswell (2008) and Johnson and Onwuegbuzie (2004) reported that the mixed method allows various data collection instruments to test in-depth the research questions. The current study adopted the explanatory sequential design, a mixed method, to investigate the students' cognitive and affective learning outcomes. In this design, quantitative data are collected and analyzed as a first step. Then, participant responses in the quantitative dimension are discussed based on the interviews conducted in the qualitative dimension (Creswell, 2016). It is considered that it would be appropriate to use the quantitative method to solve the 1st and 2nd questions of the research. And so, for the first question, the static group comparison design, which is sort of a weak experimental design (Büyüköztürk, Çakmak, Akgün, Karadeniz, & Demirel, 2020), was adopted to reveal the effect of collaborative testing on student achievement in algebra. On the other hand, the one-group pretest-posttest design which is another sort of weak experimental design was used to test the second research question.

In the study, qualitative data were collected to investigate students' views of collaborative testing and complement the quantitative data. Therefore phenomenology design is the sort of qualitative design was used to test the third research question. Phenomenological research is conducted to explore the experiences of several people with a concept (Creswell, 2016). This study aimed that explore students' experiences of collaborative testing process.

Tablo 1. Research design

Mixed Method		
Quantitative	Weak Experimental Design	
Testing First research problem	The Static-Group Comparison Design	
Group	Pre-test	Post-test
Experimental	-	+
Control	-	+
Testing second research problem	The One Group Pretest-Posttest Design	
Group	Pre-test	Post-test

Experimental Group	+	+
Qualitative	Phenomenology Design	
Testing third research problem	Phenomenology Design	
Group	Experimental Group	

2.2. Study Sample

The current study was carried out with 33 students, 16 of which were from 6-A class and 17 of which were from 6-B class and their mathematics teachers in a lower secondary high school in an urban center in the Eastern Black Sea Region in Türkiye. The mathematics performance scores of students in the different classrooms were compared and two equivalent classrooms were selected by also receiving the opinions of the math teachers. The groups were randomly assigned as the experimental and control groups.

2.3. The Research Process

The research process was designed in two stages. The first stage aimed to determine the learning areas associated with testing activities during the teaching process. The collaborative testing activities were conducted in the 6th grade mathematics lessons. After official approval was obtained, face-to-face interviews were conducted with the mathematics teachers in the school. In these interviews, mathematics teachers stated that, based on their prior experiences, students experienced difficulties in acquiring algebra attainments and thus, the activity was designed for algebra. The content of the testing activities was developed to include predetermined learning area acquisitions.

In the second stage involved designing the collaborative testing activities which would be applied throughout the research. In this design process, the number of attainments for algebra was significant. The planned collaborative tests were modelled initially as collaborative, and then, as individual exams. Both collaborative and individual tests were designed to include similar questions that measure the same attainment. Testing focused on student performance in the application of knowledge in similar situations. The collaborative testing model developed in the study is presented in Table 2.

Table 2. The collaborative testing model developed in the study

1st Quiz	Feed back	2nd Quiz	Feed back	3rd Quiz	Feed back	1st exam	4th Quiz	Feed back	5th Quiz	Feed back	2nd exam	Follow-up Test

:Individual test :Collaborative test

The activities were conducted in 8 weeks. Since it was required that the students have subject-area knowledge on related attainments prior to the testing, the time schedule was planned with the mathematics teacher. The researchers did not intervene in the instruction process. An introductory meeting about the study was held with the students in the experimental group. In the prepared presentation, the students' questions about the process were answered sincerely since they would be part of such a study for the first time. The activities were conducted by the researchers during the class hours allocated for this purpose every week. Çalık Uzun and Birişçi (2018) suggest that there should be a feedback process in order to conduct the collaborative testing more effectively. Considering this suggestion, a feedback phase was added to the implementation process while planning this study. After each test, student responses were examined by the researchers; student misconceptions, errors and problems in these questions were identified. Before the next exam, separate interviews were conducted with the groups to address and eliminate these issues. Since the individual test and the group test were prepared as equivalent, it was not necessary to provide feedback after the individual

test. The mathematics teacher did not participate in the implementation session. One week after the activities, interviews were conducted with the all students about their experiences during the implementation.

2.4. Data Collection Instruments

In accordance with the nature of the mixed method approach, both quantitative and qualitative data collection techniques were employed in the present study. It was considered that the quantitative data could be further elaborated with the qualitative data. However, the algebra attainment test could not be applied as pre-test in the study group. It would not be adequate to measure the academic achievement in algebra as a pre-test since algebra was included in the 6th grade for the first time and the students did not have any early algebra knowledge. Considering that the participants moved from an early-algebraic period to an algebraic period and encountered the learning outcomes related to this learning area for the first time, it was thought that it would not be meaningful to conduct a pre-test for algebra performance in the experimental group. The holistic version of the quantitative data collection instruments is presented in the Table 3 below.

Table 3. Quantitative data collection instruments and their implementation

Group	Pretest	Implementation	Posttest
Experimental	-	Collaborative Testing	Algebra attainment test
Control	-	-	Algebra attainment test
Experimental	Mathematical attitude test	Collaborative Testing	Mathematical attitude test
	Exam anxiety inventory		Exam anxiety inventory

On the other hand qualitative data were collected by interviewing students that joined the study. In the interviews, the students were asked questions about their experiences in the collaborative testing process. Sample questions can be listed as follows; What are your likes and dislikes about the collaborative test technique? Please describe your experiences; Is there anything you learned from your friends during this implementation process? Can you explain with examples?; You have joined tests individually and with a groupmate for a few weeks What can you say when you compare the individual tests with the collaborative tests? The data collection tools to be used within the sub-problems of the study and their explanations are given in detail below under sub-headings.

2.4.1. Algebra attainment test

The open-ended exams on algebra for both collaborative and individual testing activities were developed by the researchers and the mathematics teacher of the class where the implementation is carried out. First of all, open-ended parallel questions were prepared with the mathematics teacher for algebra achievements. And then 2 experts in mathematics education were consulted about these questions regarding their suitability for the achievements and their equivalents of questions. Then, these questions were implemented to 5 randomly selected 7th grade students. After the implementation the questions the participants failed to comprehend were revised. A similar method was adopted in all tests. Since the final questions which were arranged according to the feedback and prepared in accordance with the attainments were similar, they were randomly assigned to group and individual activities. These exam included 6 attainments in algebra sub-learning areas in the mathematics syllabus. The attainment included in the tests are presented in Table 4.

Table 4. Algebra attainments included in the tests

Test type	Application	Related attainment
1st Quiz	Collaborative	6.2.1.1.
2nd Quiz	Collaborative	6.2.1.2. 6.2.1.3.
3rd Quiz	Collaborative	6.2.1.4.
1st Exam	Individual	6.2.1.1. 6.2.1.2. 6.2.1.3. 6.2.1.4.
4th Quiz	Collaborative	6.2.1.5.
5th Quiz	Collaborative	6.2.1.6.
2nd Exam	Individual	6.2.1.5. 6.2.1.6.
Follow-up test	Individual	6.2.1.1 6.2.1.2. 6.2.1.3. 6.2.1.4. 6.2.1.5. 6.2.1.6.

6.2.1.1. Expresses the rule in arithmetic sequences with letters, can determine the requested term in the arithmetic sequence depicted with letters.
6.2.1.2. Can express verbally in algebraic terms and can express an algebraic case verbally.
6.2.1.3. Can calculate an algebraic equality based on various natural number variations.
6.2.1.4. Can discuss the meaning of simple algebraic expressions.
6.2.1.5. Can add and subtract algebraic representations.
6.2.1.6. Can multiply an algebraic expression by a natural number.

Each activity was implemented as collaboratively or individually when the time came during the research process. Examples of parallel questions are given in Figure 2 and Figure 3.

Fill in the blanks in the table below with appropriate expressions.

Algebraic Expression	Coefficient	Constant Term	Number of Term
$\frac{3m}{8} - 54$			
	-11	67	
$17z - 106$			
	2	-2,2	2
	-0,6	4	
$0{,}07x - 23$			

Fill in the blanks in the table below with appropriate expressions.

Algebraic Expression	Coefficient	Constant Term	Number of Term
$5x$			
	3	2	2
$\frac{y}{4} - 5$			
	-6	-3	
$13 - 5z$			
	0,7		1

Figure 1. Parallel question examples developed for collaborative and individuals tests

Hilal is considering changing her mobile phone contract. After examining the different contracts, she gets the following information about them.

Contract A
15 TL Fixed Fee
&
45 cents per minute

Contract B
60 cents per minute

According to the given information above, assuming that Hilal speaks at an average of x minutes per month, fill in the blanks in the table below with the appropriate algebraic expressions.

Talk time (minute)	Fee	
	Contract A	Contract B
x		

Arzu decides to go to the gym. She receives fee information from 2 gyms in the city. Since Arzu thinks of going to the gym "**x**" times a month, find the algebraic expressions that give the price she has to pay for each gym.

Efor Gym ***algebraic expressions***
6 Turkish Lira
for each session

Fit Gym ***algebraic expressions***
20 TL fixed fee
&
2 Turkish Lira
for each session

Figure 2. Parallel question examples developed for collaborative and individuals tests

2.4.2. Exam anxiety inventory

The Exam Anxiety Inventory (EAI), developed by Spielberger in 1980 and adapted to Turkish language by Öner (1990), was used to determine exam anxiety levels of the students. As suggested by Liebert and Morris (1967), the inventory includes two sub-dimensions: "emotionality" and "worry". EAI includes 20 items that are scored based on a 4-point scale [(1) almost never, (2) sometimes, (3)

often, (4) almost always] with instructions. In the Turkish language version, the worry dimension includes 8 items (2, 3, 4, 5, 8, 12, 17, 20), and the emotionality dimension includes 12 items (1, 6, 7, 9, 10, 11, 13, 14, 15, 16, 18, 19). The highest score that can be obtained is 80, and the lowest score is 20.

2.4.3.Mathematical attitude scale

The Mathematics Attitude Scale (MAS) scale was developed by Aşkar (1986) to determine student attitudes towards mathematics. The MAS includes 10 positive and 10 negative 5-point scales ("Strongly Disagree", "Disagree", "Undecided", "Agree" and "Strongly Agree"). The Cronbach Alpha reliability coefficient of the scale developed by Aşkar (1986) is 0.96 and it is a single dimensional scale. The Cronbach Alpha reliability coefficient was calculated as 0.93 in the current study.

2.4.4. Interviews

In this study, the interview technique was employed to determine the views of the students on the collaborative testing. Face-to-face interviews that included semi-structured questions were conducted with the participants and interviews were recorded after participant consent was obtained. Although the questions in semi-structured interviews were predetermined, this technique was considered advantageous since the interviewers could change the order of the questions and provide the opportunity to respond to the questions in detail (Çepni, 2009). The semi-structured interview questions were developed by the researchers and asked individually to the students who participated in the collaborative test. To test the relevance and comprehensibility of the questions, they were submitted to two mathematics education experts for their review. The researchers asked these experts to make suggestions about the questions that should be included in the interview questions. For example, suggestion of adding questions about what was good and what were the difficulties that students face when doing group work to the interview questions were taken into consideration. The interview questions were then revised and finalized based on their expert opinions. Interviews lasted approximately 30 minutes. The recorded interviews were transcribed.

2.5. Data Analysis

Quantitative and qualitative data collection techniques were employed in the research methodology, and different analysis methods were used to analyze the data. How the analysis of data collected is explained below.

2.5.1. Quantitative data analysis

SPSS 17.0 program was used in the analysis of the quantitative data, arithmetic mean, standard deviation and percentages were calculated. Normality analyzes were applied to decide on the use of parametric and non-parametric tests. It is known that the Shapiro-Wilks method, which is one of the methods used when evaluating normality, is statistically powerful in small samples (Pituch & Stevens, 2009). In this study, Shapiro-Wilks normality analysis was used since there were 16 in the experimental group and 17 in the control group. In addition, the normal distribution of the data was evaluated by calculating the skewness and kurtosis values. It was seen that the quantitative data for the research's cognitive learning outputs were normally distributed. Normality values are given in Table 5.

Tablo 5. Normal distribution of data for cognitive learning

Shapiro-Wilks Test	N	p	Skewness	Kurtosis
Experimental	16	0.39	-0.48	-0.32
Control	17	0.11	-0.29	-1.24

As can be seen in Table 5, the data for cognitive learning outcomes are normally distributed ($p > 0.05$). It is stated that skewness and kurtosis values between +2 and -2 are seen as an adequate criterion for normality (Gravetter & Wallnau, 2013). In addition, histogram graphs and Q-Q plot graphs related to the normal distribution of the control and experimental group data are included in the appendices of the research (Appendix-A). İndependent samples t-test was used to determine the

differences between the control and experimental groups at p=0.05 significance level. On the other hand this research is a static group comparative design, the data on affective learning were examined within the experimental group itself. The normality values of the data for affective learning were examined in order to make analyzes for in-group evaluation. Normality values are given in Table 6.

As can be seen, the data on mathematical attitude and test anxiety, which are among the data for affective learning, are normally distributed. The data for affective learning outcomes are normally distributed (p> 0.05).

Tablo 6. Normal distribution of data for affective learning

Shapiro-Wilks Test	N	p	Skewness	Kurtosis
Exam anxiety	16	0.60	0.14	0.96
Mathematical Attitudes	16	0.25	0.98	0.75

In addition, histogram graphs and Q-Q plot graphs related to the normal distribution of the mathematical exam anxiety and attitude data are included in the appendices of the research (Appendix-B-C). Therefore, the Dependent Samples t-test was used to look at the test anxiety and mathematics attitude of the experimental group within itself. When the sub-dimensions of the anxiety scale for exams were examined, it was observed that the data for each dimension were also normally distributed (p_{worry} and $p_{emotionality} > 0.05$).

2.5.2. Qualitative data analysis

The qualitative data collected from interviews from students were analyzed with content analysis (Yıldırım & Şimşek, 2008). Thus, initially, the interview records were transcribed. In doing so, the statements of the students and the teacher were transcribed verbatim as they were expressed during the interview so that they remained structurally intact. In the analysis, the transcribed interview data were transferred to the MAXQDA 2020 qualitative data analysis software and coded separately by both researchers. Researcher triangulation and time triangulation techniques were used to increase validity. Researcher triangulation means including more than one researcher in the data analysis process of the study (Başkale, 2006). Both researchers separately coded at different time intervals, and the codes were brought together and discussed until a consensus was reached. It was then decided under which themes the common codes obtained should be grouped. The determined codes and themes were employed in the analysis, and the findings were interpreted and supported by direct quotes. In the process, code names (S1, S2, etc.) were used instead of the actual names of students.

3. FINDINGS

The findings of this study, which was conducted to determine how the exam activities carried out collaboratively affected learning outcomes, are presented as items in line with the sub-objectives of the research.

3.1. Cognitive Learning Findings

This section outlines the findings on the tests administered in the experimental (6A) and control (6B) groups after the unit lesson was taught. The mean test scores and comparison of the group scores were determined with the independent samples t-test, and the results are presented in Table 7.

Table 7. Independent samples t-test results of algebra exam test scores of students in experimental and control groups

Group	**N**	**M**	**SD**	***df***	***t***	***p***
Experimental (6A)	**16**	**22.5**	**12.24**	**31**	**-5.33**	**0.59**
Control (6B)	**17**	**20.29**	**11.52**			

The analysis of the data presented in Table 7 revealed that the mean algebra attainment test score of the experimental group (M = 22.5, SD = 12.24 was higher than that of the control group (M= 20.29, SD = 11.52) in the collaborative test. It was found that the difference between the mean scores in terms of increased performance was not statistically significant ($p > .05$).

3.2. Affective Learning Findings

3.2.1. Exam anxiety scale (EAS) findings

The impact of collaborative testing on exam anxiety was tested according to the second sub-problem. To determine the whether there was a statistical significance between the mean scores, Dependent groups t test was carried out and the findings are presented in Tables 8.

Table 8. Dependent samples t-test results of exam anxiety test scores

Exam Anxiety Test	Test	N	*M*	*SD*	*df*	*t*	*p*
Worry	Pre-test	**16**	**17.87**	**6.31**	**15**	**0.32**	**0.74**
	Post-test	**16**	**18.43**	**6.58**			
Emotionality	Pre-test	**16**	**28.50**	**7.27**	**15**	**-0.66**	**0.51**
	Post-test	**16**	**27.50**	**6.48**			
Total score (EAS)	Pre-test	**16**	**46.37**	**12.54**	**15**	**-0.15**	**0.88**
	Post-test	**16**	**45.93**	**12.65**			

The analysis of the mean sub-dimension scores presented in Table 8 demonstrated that the anxiety levels in the "worry" sub-dimension increased in the post-test, while the anxiety levels decreased in the "emotionality" dimension. The total mean pre-test score was 46.37 and the total mean post-test score was 45.93. However, the decrease in exam anxiety was not statistically significant in the experimental group ($p > .05$).

3.2.2. Mathematical attitude scale (MAS) findings

The impact of the collaborative testing on student attitudes towards mathematics was tested in regard to the third sub-problem. To determine the statistical significance of the increases in mean scores, dependent groups t test was conducted and the results are presented in Tables 9.

Table 9. Dependent samples t-test results of mathematical attitude test scores

Mathematical Attitude Test	Test	N	*M*	*SD*	*df*	*t*	*p*
Total score (MAS)	Pre-test	**16**	**66.62**	**12.88**	**15**	**-4.49**	**0.00**
	Post-test	**16**	**78.93**	**10.18**			

The mean pre-test scale score was 66.62 and mean post-test scale score was 78.93. The general analysis of the MAS scores revealed that the increase in the post-test attitude scores towards mathematics was statistically significant after collaborative testing ($p < .05$).

3.3. Students' Views Findings

The views of the students on the collaborative testing were categorized in four themes: "cognitive", "affective", "social" and "suggestions" (see Figure 3). It was observed that the views of the participating students in the cognitive dimension of the collaborative testing application were grouped under categories such as "individual learning" and "collaborative learning".

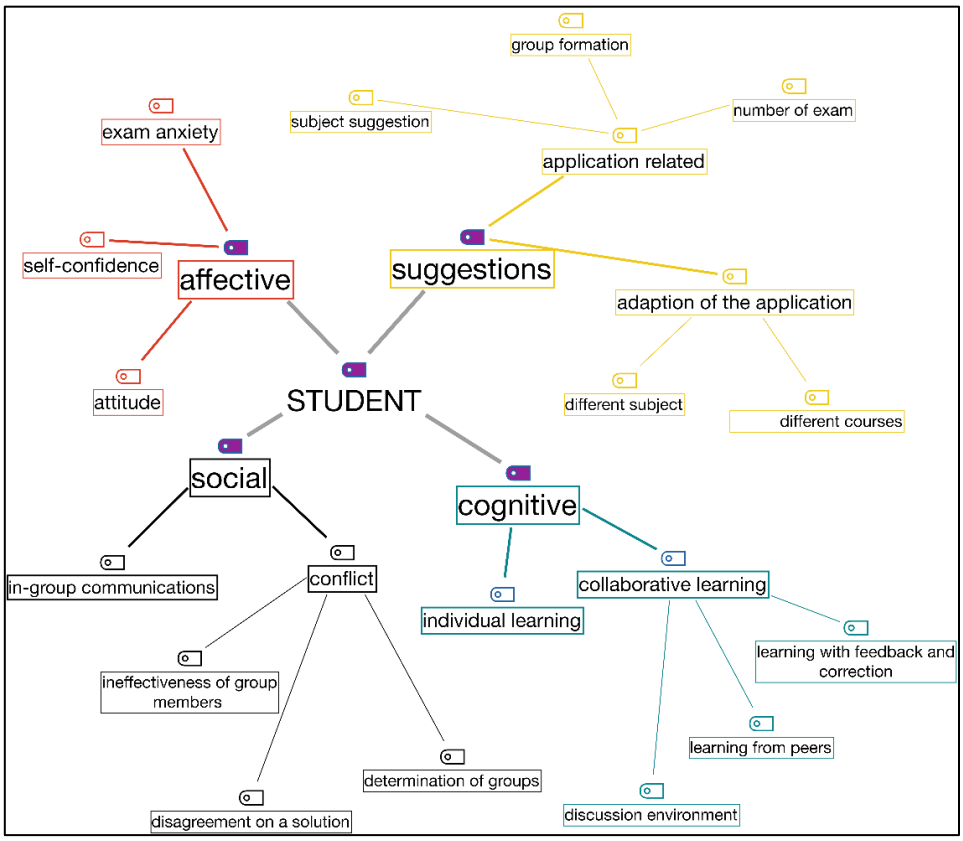

Figure 3. The themes and sub-themes determined based on student views

The students stated that they had the opportunity to discuss with their peers and collaborated with them to accomplish individual learning. The students claimed that they experienced self-learning in algebraic expressions, and the technique improved their classroom performances. The dialogue between the student S2 and the researcher is presented below.

> ***R:*** *[…]OK, for example, did you feel that your performance in algebraic expressions improved in the lesson? Were there times where you could say "I went up to the board more, I raised my hand more"? (08:10-08:21)*
> ***S2:*** *I was not doing anything in the first semester. I used to sit in my desk and not being active. (08:21-08:26)*
> ***R:*** *The second semester? (08:27-08:27)*
> ***S2:*** *I tried to improve a little in the second semester; then you came, and that was nice, I learned better. I was learning from our teacher, my friends and you. (08:28-08:38)*
> ***R:*** *Did this activity contributed to your improvement? Let's say, for increasing your classroom performance? (08:39-08:46)*
> ***S2:*** *Of course, it did. (08:46-08:46)*

Similarly, other students emphasized the contribution of the collaborative testing as follows: "*I understood similar terms better", "You arrived, and I understood the terms coefficient and constant", "I did not know the term numbers very well, I did not understand, I understood them during the collaborative tests. Now I can do them much better*". Furthermore, certain students stated the impact of the collaborative testing on learning very clearly. For example, participant S1 stated: "*I learned more with collaborative tests*". Also, during the application, it was observed that the students solved the algebra problems easily through discussions with their peers. These student opinions were categorized under the theme "collaborative learning". As seen in Figure 4, student views on collaborative learning were categorized in three groups: "learning from peers", "discussion environment" and "learning with feedback and correction. Students stated that they understood the question better and got better grades

when they solved the test with their peers. Participant S13 stated that they solved the problems in solidarity and collaboratively: "*It was easier when we did it together; because when we combined our ideas, great things emerged*." The conversation between the researcher and S12 is presented below:

> ***S12:*** *I had not really understood the algebraic expressions that much, but when we worked in a group, we learned by sharing our ideas. (4.06-4.15)*
> ***R:*** *So, why do you think that you understood better in a group? (4.15-4.19)*
> ***S12:*** *When compared to individual work, for example, my friends know the topics that I do not know and they help, in individual study, I cannot continue when I cannot remember but I comprehend better when I am in a group. (4.19-4.33)*

The students stated that it was easier to work with their peers and solve the problems they could not solve by themselves. For example, the participant S2 stated the following: "*For example, my friends can solve something that I cannot, I can solve what they cannot. If my friends are smarter than me, I can learn things I did not know from them. If a friend does not know what I know, then I can teach them.*" Thus, the students stated that they learned from their peers in the collaborative testing. The students mentioned that they experienced difficulties in writing verbal algebra expressions, but they learned it with the help of their groupmates. Also, some students claimed that they better understood multiplication of a binomial algebraic expression by a fixed number better after their peers explained it. Certain students experienced difficulties with coefficients in algebraic expressions, but they overcame this difficulty with the help of their peers: "[…] *coefficients, for example, I could not understand, but S1 informed us how to solve it*". On the other hand, the fact that students solved the algebra problems with group discussions demonstrated the contribution of the exercise to cognitive learning. S3 preferred the collaborative testing for the following reasons: "[…] *because we can discuss them, but we cannot discuss anything in individual tests, we make mistakes because we do not understand some questions*". S2 aslo stated that the algebra problems were solved by discussion: "*Our friends who understood would explain it to us, and we solve it by discussing*."

The "feedback" stage was significant in student statements on collaborative testing exercises. The feedback provided by the researchers on the misunderstandings, mistakes and shortcomings in student responses after each test to ensure the elimination of the misunderstandings and to correct mistakes or to ensure a shortcoming was remedied was also reflected in student opinions. Based on these opinions, the final sub-theme "learning with feedback-correction" was determined in the "learning with collaboration" theme. S12 stated that collaboration with the researchers was beneficial and mentioned their acquisitions due to this collaboration as follows: "*For example, we made mistakes in certain problems; we corrected these, which improved our grades.*" On the other hand, S10 stated how they overcame the difficulties within the group: "*We made mistakes in the first test, we corrected these in the second test, and since we understood the problem, we did not make the same mistake again*." It was observed that the feedback provided by the researchers on algebra test questions was employed by the students in the next test, leading to higher grades. For example, S8 stated that they had the opportunity to correct their mistakes thanks to the feedback:

> ***R:*** *We talked about your mistakes and problems you experienced after each test with the group. Did this have an affect your performances in the next test? (01:44-01:58)*
> ***S8:*** *Yes. (01:58-01:59)*
> ***R:*** *Did it? Can you elaborate on these affects? (01:59-02:23)*
> ***S8:*** *For example, I experienced problems in tables. We experienced problems in tables in the first test and our grades were bad. In the second, we understood the tables and could identify the general rule. (02:25-03:04)*
> ***R:*** *I understand, anything else? Did you mean the tables in algebraic expressions? (03:05-03:12)*
> ***S8:*** *Yes. These, and there was 5n+1, we learned the required steps. We did not know these. (03:12-03:21)*

Similarly, it was observed that the students learned the parts where they experienced difficulties in algebraic expressions through feedback. Also, some students emphasized the significance of feedback in modeling algebraic expressions.

It was observed that the student opinions on learning algebraic expressions with collaborative testing were not only associated with "cognitive" learning but also "affective" learning. These views were categorized under three themes: "exam anxiety", "attitude" and "self-confidence". Certain students stated that their exam anxiety decreased after collaborative testing activities, while others stated that they were still very anxious after collaborative testing. S11 stated that the exercise reduced their exam anxiety: "*I was quite anxious about getting bad grades before, but I am not like that anymore, I do not feel very anxious*." Similarly, the conversation between the researcher, S6 revealed that the exercise reduced exam anxiety:

> ***R:*** *You are anxious in individual tests, but did your anxiety levels change after the collaborative testing? (4.33-4.40)*
> ***S6:*** *In fact, I am not anxious in collaborative tests, but I am very anxious in individual tests. (4.40-4.49)*
> ***R:*** *Ok, did you experience anxiety in the individual tests after the application? (4.49-4.53)*
> ***S6:*** *Yes, but less than before. (4.53-4.56)*

It was observed that the activities also affected student attitudes towards mathematics. Most students stated that their attitudes towards mathematics improved and that enjoyed the course more. The dialogue between S9 and the researcher reflects this:

> […]
> ***S9:*** *I used to think that mathematics was boring, but now I think its fun. (03:54-03:58)*
> ***R:*** *Why do you consider it fun now? (04:11-04:13)*
> ***S9:*** *Mathematics is involved in everything. (04:13-04:18)*
> ***R:*** *OK, what changed after the collaborative tests and made you think maths is fun? (04:19-04:23)*
> ***S9:*** *We learn everything in math. For example, algebraic expressions, addition; for example we add and measure areas everywhere. (04:26-04:37)*
> ***R:*** *Yes, but why is it the case after collaborative testing? Can you elaborate with examples? (04:37-04:56)*
> ***S9:*** *An example? Well, when you first arrived, in the first collaborative test, I could not do anything, I looked at the problems, and then, it started to be fun, and now I fully participate in finding solutions. (04:56-05:14)*

Similarly, it was found that the attitudes of the other students towards mathematics changed after the collaborative testing due to the algebraic attainments with which they experienced difficulties before. S8, one of the two students who stated that their self-confidence increased after the exercise, stated the following: "*It got better. How can I explain it? My confidence in mathematics improved*." S3 stated the following: "*We had less confidence in individual tests, but we had a lot of confidence in collaborative tests*". However, it was observed that one student (S13) still considered mathematics difficult, even after the exercise. On the other hand, S3 liked mathematics before the exercise and stated that there was no change in this positive feeling about the subject. Only one student (S1) stated that (s)he did not like mathematics, and this did not change, as this was a difficult topic area.

Students also expressed opinions on communication within the groups in the sessions were their opinions were sought after the collaborative testing exercise. These views were categorized in the "social" theme as seen in Figure 1. The students stated that the exercise had a positive effect on the relations with their peers. S11 stated the following: "*We did not talk to her/him much, there was a distance between us, we never played games together. Now, we always play together. We include her/him in our games*." S12 stated the following: "*We were not close, when compared to other friends, but now I am on good terms with her/him*". S7 stated that (s)he became very friendly with a groupmate

and they play games outside of school: "*Our relationship was not good before, then, it became better. We started to play together after school. So, it improved my relationship with her/him*." On the other hand, some students stated that social communication with their peers remained the same and the exercise did not lead to any changes: "*It was already good. I know S2 from folk dancing sessions; yes, we were together in folk dancing. My relationship was not good with S1, and it is still the same, no change.*" S1 similarly confirmed that communication with the groupmates remained the same.

However, certain students expressed negative opinions. These views were categorized in the "conflict" theme that included "disagreement on a solution", "ineffectiveness of group members" and "determination of groups" sub-themes. Some students mentioned the aspects of collaborative testing that they disliked and stated that sometimes the discussions did not lead anywhere, certain students who disagreed with a solution insisted on their own solution, which made it difficult for their group to complete the test. S7 stated the following: "*When solving the problems, someone solved the problem and everyone was offering their own solution, but that person insisted on their own solution, leading to problems.*" Other students stated that their groupmates did not share responsibilities. The opinions of the students who complained about non-participation of certain group members, who were interested in doing other things and did contribute to the solution were categorized under the ""ineffectiveness of group members" theme. S1 stated the following: "*It also had disadvantages. For example, lets say that someone is very smart and someone else is not. Only the smart one works*." Another student, S4 assessed this disadvantage based on time and gender, a significant finding of the study. The comment of S4 is as follows: "*When there is no consensus, they just say 'I will not do it' and they immediately withdraw, and we lose time while others in the group try to convince this person, and when the group includes both boys and girls, the boys exclude the girls, and tell us you do it, and so it remains on us to do it."* Also, most students who expressed negative opinions argued that they did not like their groups and wanted to change their groups. A few students stated that they were not happy with their groupmates, and they would be more successful if they were in a different group.

The students also expressed recommendations to improve the exercise. The analysis of the students views on recommendations about the application revealed "subject suggestion", "group formation" and "number of exam" themes. Certain students stated that the topic of algebraic expressions was quite difficult and suggested that the application should be conducted on another topic. For example, the participant coded S10 stated that "*It could be in mathematics, but I think the topic should be changed. Algebra is very difficult*." Similarly, S14 stated that "*Fractions are easier but algebraic expressions are difficult...*" Furthermore, some students expressed negative attitudes towards group formation and argued that they wanted to be in a group with intelligent students. They suggested that the groups should be formed from intelligent students. S1 stated that it was unfair: "*I wish my group had a smart one too, then I would get 100 in oral test. I mean, I cannot say it for all the groups, but 2-3 groups had the smart students, so that was why…*" Also, some students stated that they should have determined the groups. On the other hand, it was determined that the individual tests were more effective, compared to collaborative tests according to the student suggestions. For example, S5 stated the following: "*We can use different things for this. For example, what can happen in individual tests? More help could be available, the number of these could be less, the number of collaborative tests could be more. Because they can do the test collaboratively, but they could not do it in the individual test*."

Most students stated that this practice could be conducted both in mathematics and other subjects. They stated that they comprehended the problems better and got better grades when they solved the problems together; and thus, they wanted the practice to be adapted to other subject lessons. These student recommendations were categorized in the "repetition of the application" sub-theme.

The student opinions that the application could be adopted to other courses were significant. Thus, these opinions were included under the theme of "different subjects", and it was seen that the

students wanted the application to be adapted in Turkish, English, Science, and Physical Education subjects. The students who wanted the adoption of the application in different subjects stated that it should be based on the difficulty of the lesson. It was determined that one of the reasons for suggesting to adapt the practice in the science subject was the difficulty of the science subject based on student opinions. S7 stated that the application should be adopted in the English subject as well: "*Because we learn a different language in the subject, if it is adopted, we will learn English easily. I think it would be nice if it was implemented in English.*"

4. DISCUSSION and CONCLUSION

As mathematics education experts are becoming increasingly convinced that students could learn with communication, and peer-to-peer communication is considered as a primary learning tool to be included in the curriculum of several countries (Campbell, 2021). It is known that collaborative learning activities designed with an effective and organized approach provide significant opportunities for the construction of student knowledge. On the other hand, the idea that assessment could also be conducted with groupwork and that could be employed as a means for permanent learning in tests have been discussed (Çalık-Uzun & Birişçi, 2018). This idea was the foundation of this study, which aimed to employ collaborative testing as an alternative measurement and assessment method and to investigate its impact on mathematical learning outcomes. At the same time in the present study, students' views were also obtained on collaborative testing, and their experiences in the process were ascertained.

The analysis of the findings on the impact of collaborative testing, employed as an alternative assessment instrument, on cognitive learning outcomes revealed that the mean experimental group score was higher than that of the students in the control group; however, the difference was not statistically significant. Similarly, LoGiudice, Heisz, and Kim (2021) reported that student perceptions about collaborative testing were generally positive; however, they did not find evidence of a difference between the post-test grades that favored collaborative testing. Similarly, the qualitative findings of the study demonstrated that the student opinions were positive; they gained a better understanding when solving the problems in collaboration, which also improved their performances. The collaborative testing allowed students to discuss the concepts with their peers and understand them instead of experiencing disappointment with test results or not completing test items when in doubt (LoGiudice, Heisz & Kim, 2021). Various studies reported that collaborative testing increased the interaction between students (Giraud, 1997; Ioannou & Artino, 2010; Keller & Steinhorst, 1995; Magel, 1998) and contributed to learning (Bloom, 2009; Breedlove et al., 2007; Guiliodori et al., 2008; Muir & Tracy, 1999; Zimbardo et al., 2003; Zipp, 2007).

It was determined that collaborative testing had a positive impact on affective learning of students. Spielberger, Anton, & Bedell (1976) defined exam anxiety that is as an individual's disposition to worry and have interfering thoughts, feel mental confusion, and tension and give a physical reaction during any exam (cited in Alibak, Talebi, Neshat-Doost, 2019, p.2). Exam anxiety has two dimensions as worry and emotionality. In this study, the exam anxiety levels of the students were investigated as an affective learning variable, and it was determined that the collaborative testing decreased total exam anxiety score. However, the impact was not statistically significant. In a study conducted by Breedlove et al (2004), no significant difference was determined between exam anxiety in collaborative and individual tests, and it was reported that the exam anxiety was effective in organization of knowledge and the effect could vary based on the testing approach. On the other hand, when test anxiety score results are evaluated according to sub-dimensions, it was found that worry sub-dimension scores increased whereas emotionality sub-dimension scores decreased. The worry dimension is the cognitive aspect of test anxiety and includes the individual's negative evaluations of himself in general, negative thoughts about his failure, and incompetence. The emotionality dimension

is the stimulation of the autonomic nervous system, which constitutes the sensory physiological aspect of test anxiety. Physical experiences such as rapid heartbeat, chills, perspiration, nausea, redness-yellowing, irritability and tension are symptoms of emotionality (Öner, 1990: 1). Therefore, it can be said that collaborative testing has no effect on the negative cognitive thoughts that students feel during any exam. This result is also supported by the qualitative findings of the study.

Numerous studies have noted that the cooperation of the students in completing the collaborative testing and the success they attained as a result of this cooperation play a significant role in boosting the students' self-confidence (Breedlove et al., 2004; Dalmer, 2004; Grubb, 2014; Mahoney, 2019). In the current study, it was also determined in the opinions of some of the participants that the improved self-confidence in the collaborative testing process contributed to the reduction in test anxiety experienced, and the students stated that their anxiety about individual exams decreased. This outcome backs up a number of research in the literature (Amaral, 2004; Mahoney & Reeves, 2019; Pandey & Kapitanoff, 2011; Willard, 2015; Zimbardo et al., 2003). Students' ideas expressing the contrary of these thoughts are also found when the qualitative study findings are reviewed. In fact, some students claimed that when working on solutions with others in their group, they had no worries, but taking the exam alone, they felt quite uncomfortable. It can be said that these students depend on the ideas of their other group members to solve the problems together, and they are nervous since they believe that other students won't be able to help them with individual tests.

The mean attitude towards mathematics scores of the students, an affective variable, increased in the post-test in comparison to the pre-test. Thus, it can be stated that collaborative testing was effective on mathematical attitudes, since education plays a key role in changes in attitude (Duatepe & Çilesiz, 1999). Furthermore, the qualitative study findings demonstrated that most students had fun when discussing the test activities within a group and enjoyed talking about mathematics. However, it was observed that the attitudes of some students who already liked mathematics or those who never liked it, did not change. This could be explained by student beliefs associated with learning mathematics.

The qualitative study findings on the opinions of students on collaborative testing suggested that collaborative testing improved student attitudes towards mathematics as a subject, their cognitive and social communications in the group, and classroom performance (Çalık-Uzun & Birişçi, 2018). It was revealed that they would be happy to continue the practice in future lessons. Some students expressed negative opinions, claiming that they were ignored by their groupmates; they were dissatisfied with their peers who did not contribute to collaboration and mentioned that there was occasionally discussion which were inconclusive. Some studies reported that certain limitations of group members could lead to obstacles to collaborative testing. The disadvantage of the technique is the fact that the inactive group members during the collaborative tests would also benefit from the success of the group in the test environment (Çalık-Uzun & Birişçi, 2018).

Our study supports the results of many studies in the literature by showing that collaborative testing can be usefully applied in classroom exams. It was determined that collaborative testing contributed to the cognitive and affective learning of students, as supported by the students' opinions. It was determined that there was no statistically significant difference between several variables that were analyzed in the study. However, it was observed that total variable scores increased, which was also supported by the qualitative findings. It could be suggested that longitudinal studies could be conducted for collaborative testing. Because students may require a certain period of time to adapt to the transformation from a traditional measurement and assessment system to a collaborative testing method. The current study presented a cross-section of the assessment of algebra learning area attainments. Since the students were in the transition period from a pre-algebraic point to the algebraic period, it was not surprising that there were no significant differences between the cognitive learning scores. While investigating the effect of the study on cognitive learning, the algebra attainment test

could not be administered as a pre-test because the students encountered algebraic expressions for the first time in 6th grade. This situation caused us to limit the study to a simple experimental design. Different results can be obtained with quasi-experimental studies designed for other learning domains.

It could be suggested that problems in the solution process could be eliminated with the inclusion of collaborative testing activities in assessment as an alternative to traditional individual assessment techniques (Johnson & Johnson, 1999). Thus, the repetition of the study on different topics and levels would contribute to the literature.

In summary, we repeat the call by Muir and Tracy (1999) made over 2 decades ago and invite teachers to try collaborative testing to assess their students' cognitive and affective learning in mathematics lessons. As the researchers of this study, we defend that it is valuable to use collaborative testing in math courses as an alternative assessment tool.

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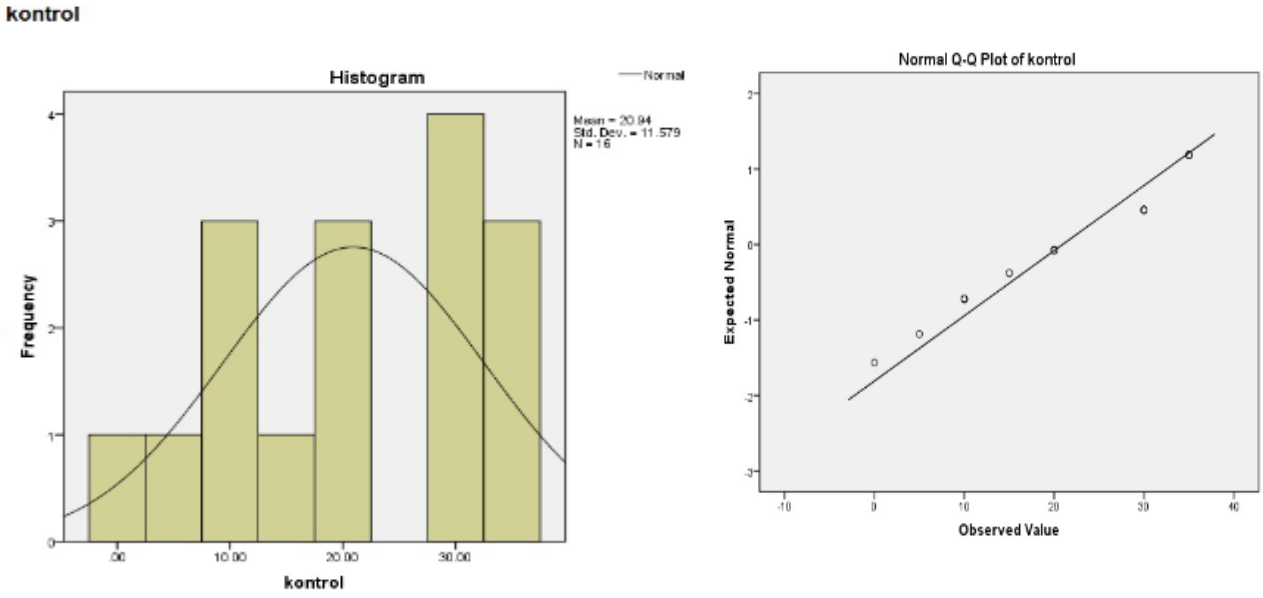
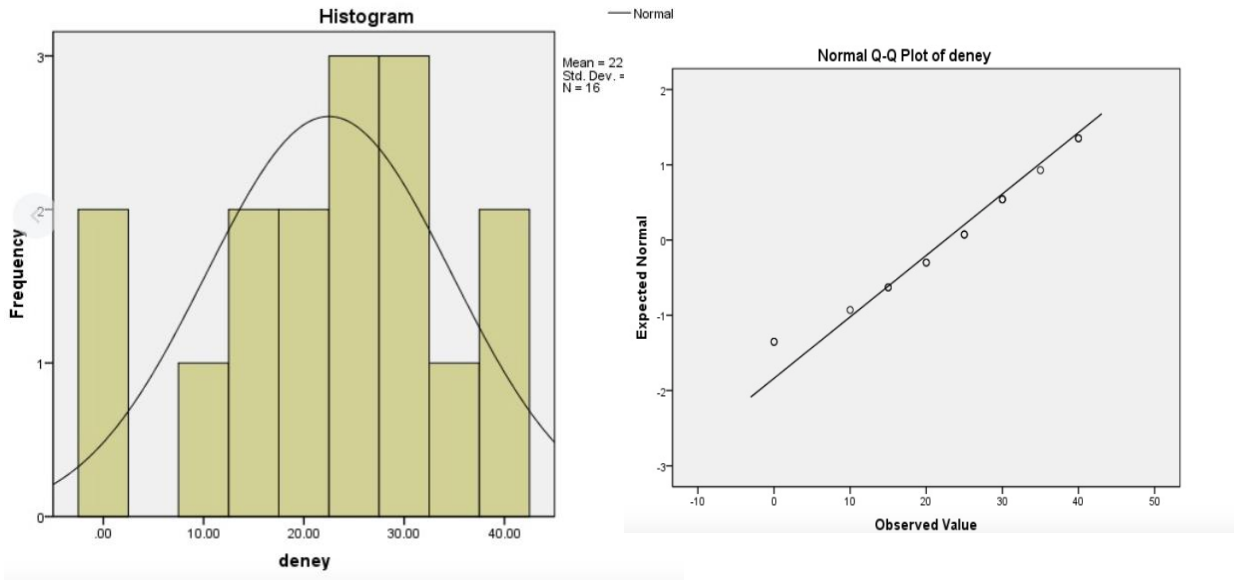
Appendix -A

Histogram and Q-Q plot graph of the control group

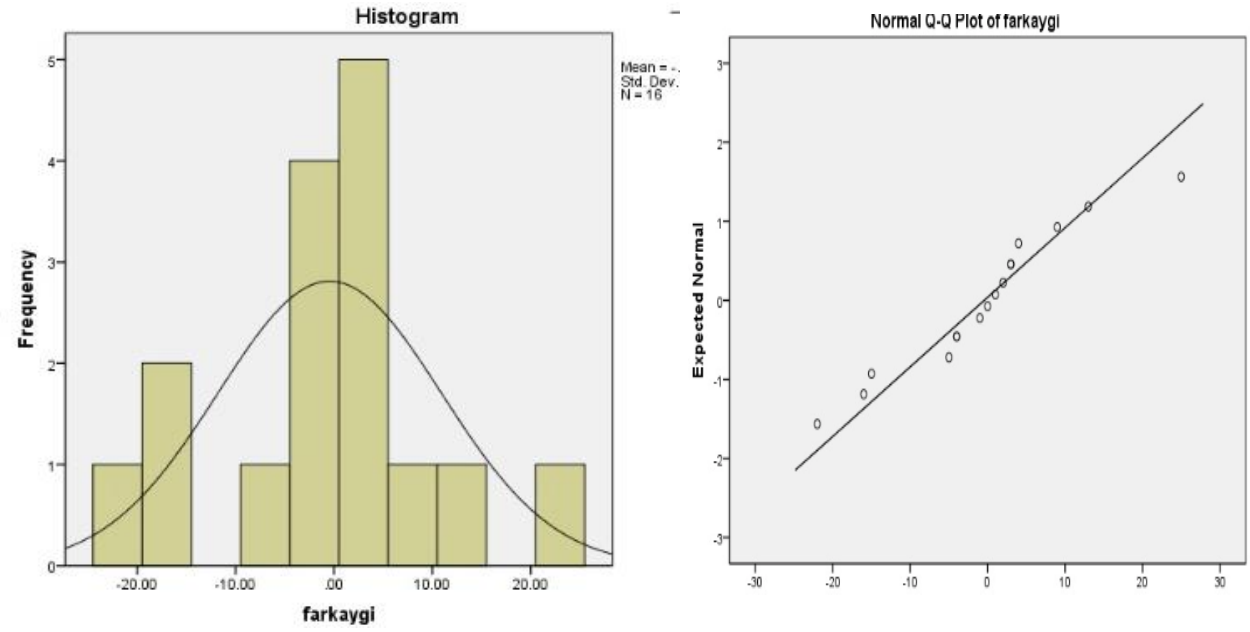


Histogram and Q-Q plot graph of the experimental group



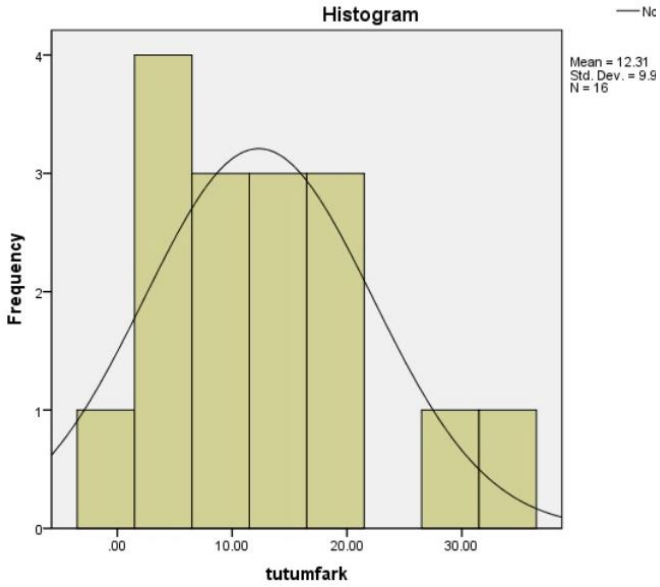
Appendix -B

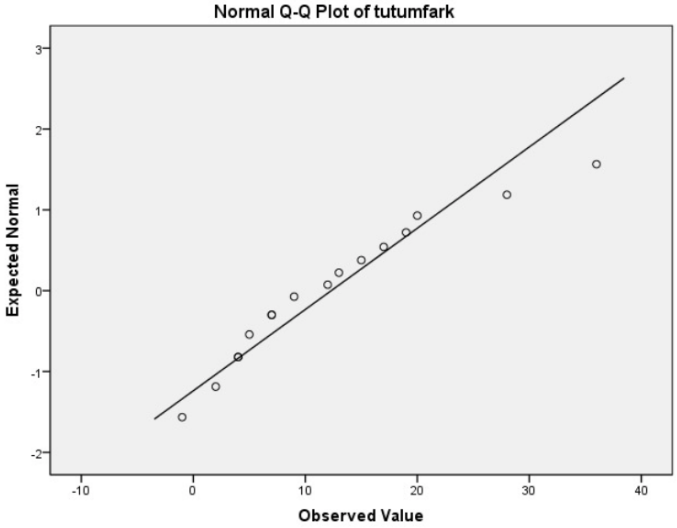
Histogram and Q-Q plot of the normal distribution of exam anxiety data

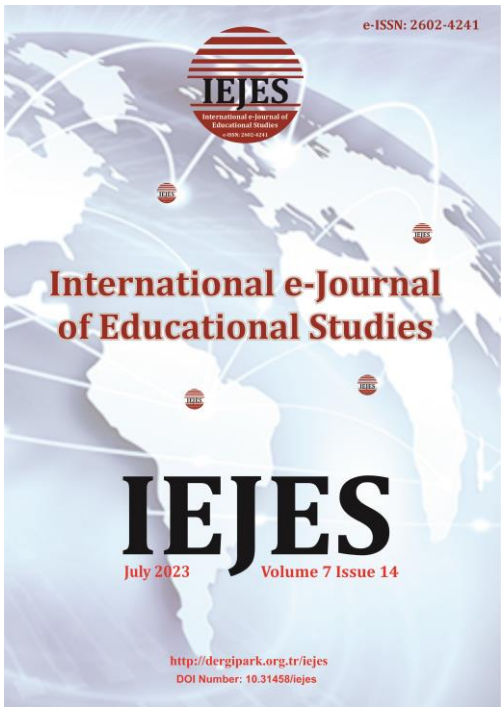


Appendix -C

Histogram and Q-Q plot of the normal distribution of mathematical attitude da







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Abstract

The aim of this study is to analysee the content of postgraduate theses on lifelong learning in Turkey between the years 2007-2022. Only the thesis studies that are in the national thesis center database and that are open to the access of other researchers by the researchers who carried out the thesis studies were included in this study. A total of 212 theses related to lifelong learning were identified in the detailed search conducted in the national thesis data center. However, one of these theses was not included in the scope of the study because there was no access permission and 7 of them were out of the field, and the remaining 204 theses were examined. Content and frequency analysis methods were used. Data on the year of publication, subject area, working group, method and findings of the examined theses were created. According to the results of the research, it was seen that the postgraduate thesis studies were mostly in the field of competence development and gaining proficiency between the years 2007-2022, the quantitative research method was mainly used, and the teachers were mostly preferred as the sample group.

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Research Article

The Study of Thesis Made on Lifelong Learning in Turkey by Document Analysis*

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Abstract

The aim of this study is to analysee the content of postgraduate theses on lifelong learning in Turkey between the years 2007-2022. Only the thesis studies that are in the national thesis center database and that are open to the access of other researchers by the researchers who carried out the thesis studies were included in this study. A total of 212 theses related to lifelong learning were identified in the detailed search conducted in the national thesis data center. However, one of these theses was not included in the scope of the study because there was no access permission and 7 of them were out of the field, and the remaining 204 theses were examined. Content and frequency analysis methods were used. Data on the year of publication, subject area, working group, method and findings of the examined theses were created. According to the results of the research, it was seen that the postgraduate thesis studies were mostly in the field of competence development and gaining proficiency between the years 2007-2022, the quantitative research method was mainly used, and the teachers were mostly preferred as the sample group.

Keywords: Lifelong learning, document analysis, study of thesis

1. INTRODUCTION

The individual learns different knowledge, skills and behaviors in order to continue his life by interacting with his environment from the moment he is born. Learning activities, which are carried out without a specific plan and program at first, turn into a programmed, gradual and conscious state when the individual starts school. The individual directs his life by using the information he has learned in school and out of school environments. Individuals who graduate from schools that provide vocational training at certain levels have the capacity to do these jobs. However, unlike the past centuries, it is no longer possible for an individual to work continuously in a job with the knowledge that he graduated from school (Merriam & Brockett, 2011). Among the reasons for this are the rapid development of technology and its use in business environments, and the necessity of individuals to acquire new skills in this regard, as a result of the decrease in the need for manpower; the expectation of individuals who will be accepted to a job, to be experts in a few subjects, the ability to receive job applications from different places due to global mobility and etc.

All these reasons make the education received in schools inadequate today. Today, as 21st century skills are discussed and cared more about, it makes lifelong learning a key role (Elias & Merriam, 2005). In order to keep up with the requirements of the constantly and rapidly changing age, individuals need to constantly improve themselves, acquire knowledge and skills related to developments in their field of expertise, learn new knowledge and skills in different fields, and not fall

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behind in the competition in business life (Berberoglu, 2010). In this context, the concept of lifelong learning has emerged. independently of many limitations like with age, gender, place, time, etc lifelong learning provides individuals with the opportunity to develop themselves. In addition, in a wider process; it gives the opportunity to reveal the talent, competence and potential that could not be revealed with the education that the individual received in a limited time period. It enables the individual to obtain information in areas of interest and concern. The changes that individuals live and adaptation to the developments increases their flexibility on adaptation and self-efficacy (Arslan, Ozsoy, & Aslan, 2019).

Lifelong learning is a dynamic concept that encompasses all formal and non-formal education efforts aimed at improving all the possibilities of education as a whole (Gülec, Celik, & Demirhan, 2012). Within the scope of all these definitions, lifelong learning focuses on the maximum level of wide development and self-actualization of the individual. According to Doyle (1992), the main goal of education is to prepare students for lifelong learning, that is, learning to learn. The concept of lifelong learning is defined as the activities people choose throughout their lives to improve their knowledge, skills and competences in a certain field (Field, 2010). European Commission (2000); defined lifelong learning as purposeful learning activities that individuals perform throughout their lives in order to develop their personal, social and institutional knowledge, skills and competences (Brass, Carley, MacLean, & Baldwin, 2012). According to Knapper and Cropley (2000), lifelong learners are active learners who plan and evaluate their own learning instead of waiting for others to plan for them. They are smart enough to use the information they have learned from their peers and teachers in different combinations in both formal and informal environments, and they have the ability to create different learning strategies for different situations (Kaplan, 2016). Olssen (2006) defines lifelong learning as an on-going learning process based on individual needs, conditions, interests and learning skills.

Lifelong learning is a concept that states that the learning process of the individual from birth to death continues actively in school and out-of-school environments. Putting 21st century skills to work and providing high-level skills that enable individuals to adapt more easily to the developing and changing world necessitated the consideration of lifelong learning as an education policy (Bilasa & Taspınar, 2017). With lifelong learning, it is aimed to overcome difficulties in many areas like economic, social, educational, technological areas (Aykaç, Aslandağ & Köğce, 2020; Field, 2010). It is emphasized that successful countries that want to be leaders in the world in the future should have internalized being an information society, have individuals who can easily acquire new knowledge and skills and include them in their daily lives, and therefore they should carry out lifelong learning activities in different fields (Latham, 2000). As a result of both the lifelong learning policies of countries and the demands of individuals to learn different knowledge and skills, it is necessary to increase the access and quality of lifelong learning programs in order to increase professional development.

The term lifelong learning was first used by UNESCO in 1960. In the 1970s, the concept of lifelong learning became one of the important policies of UNESCO (Catal, 2019). The year 1996 was declared the European year of lifelong learning and the Declaration of Lifelong Learning was published in 2000 (Miser, 2020). 6 key messages are given in this paper. These are expressed as renewing people's knowledge and skills, increasing investment in human resources, improving education with new learning ways, and enabling people to benefit from lifelong learning opportunities (Akbas & Ozdemir, 2002). Lifelong learning came to the fore in Turkey after the 2000s, and then the General Directorate of Lifelong Learning was established in 2011 under the Ministry of National Education (Gülec et al., 2012). By preparing a Lifelong Learning Strategy Document and an Action Plan, which will last for 5 years in 2009 and 2013, it is aimed to make the lifelong learning system more systematic in line with national and international approaches. In the document, first of all, the

importance of lifelong learning for Turkey was explained and education policies and legislation aimed at strengthening the foundations of lifelong learning were taken into account. Then, a summary of the current state of the lifelong learning system was presented, focusing on the main challenges that were prioritized to be resolved (Lifelong Learning Strategy Document and Action Plan, 2014). In the following years, the Lifelong Learning Strategy Document was published in the period of 2014-2018. In this strategy document, priority is given to increasing lifelong learning opportunities and access to these opportunities, and developing a monitoring and evaluation system (Lifelong Learning Portal, 2023). In addition, the 2023 Education Vision in Turkey has been announced (2018). Including lifelong learning as a term in the 2023 Education Vision document; also contributes to raising social awareness on this issue (Tarhan, 2019).

The concept of lifelong learning is often used synonymously with adult education, continuing education and non-formal education. The basis of lifelong learning is the individual's participation in various lifelong learning activities and programs. Lifelong learning aims to invest in people with new knowledge and skills according to the needs of the century (Abedini, Abedin, & Zowghi, 2021). In recent years, countries in the world have invested in lifelong learning as both an education and an economic policy tool. Especially developed countries compete with each other to increase their resources. According to the 2018 data of the European Statistical Office (Eurostat), the adult participation rate in lifelong learning is 32% in Switzerland. With this ratio, Switzerland ranks first in terms of participation in lifelong learning activities. It is followed by Sweden with 29%, Finland with 28.5% and Denmark with 23.5%. In Turkey, the participation rate of adults in learning is 6.2% (Urhan, 2020). Within the scope of this information, it is seen that there is a positive relationship between the level of development of the countries and the participation of adults in learning.

When the literature is examined, there are studies in which theses are examined at different year intervals. Ozturk (2020) examined 111 postgraduate theses on “lifelong learning” between 2007 and 2020 according to various variables. Yenen, Kılınc, and Bulut (2016), on the other hand, researched 21 master’s and doctoral theses between 2007 and 2014 on lifelong and lifelong learning. Kılınc and Uzun (2020) examined lifelong learning-themed master’s theses made in Turkey between 1980-2020. According to the results of the researches, there has been an increase in the number of theses written with the theme of lifelong learning in recent years; however, it has been observed that most of the theses written were carried out in a few specific universities. Ozudogru, Baltacı, and Ozcakır (2021) conducted the bibliographic evaluation of theses on lifelong learning in Turkey. As a result of their study, it is found that more vocational and in-service training as a subject; more quantitative method, more teachers as sample group; more scale as data collection tool; mostly descriptive analysis as a method of analysis were used. In the literature, it is seen that the number of theses on lifelong learning has increased rapidly. In this direction, it has been decided to carry out this study, considering that the determination of the prominent elements in the studies conducted in the last 15 years regarding lifelong learning will contribute to the literature. The aim of this study is to examine the theses made in Turkey until December 2007-2022 with document analysis. Since theses on lifelong learning are handled in terms of subject, method and results, this research is important for those who want to do research in this field in terms of being an indicator of the current situation and orientation in lifelong learning. In this context, the question of this research is; according to some variables how do postgraduate theses on education and on lifelong learning progress from past to present? In line with this research problem, the sub-problems are:

In the theses about lifelong learning examined;

- Year
- Subject,
- Method
- Sample

- Data collection tools
- Data analysis method

How are the results obtained from the theses related to above markers?

2. METHOD

This section will be examined under the titles of the research model, study group, data collection tool and data analysis.

2.1. Model of the Research

In the research, document analysis method which is one of the qualitative research methods was used. Obtained data were analyzed by document analysis method. Document review, also defined as documentary observation or documentary scanning, is the process of systematically coding and examining existing sources containing information about the subject under investigation. Document analysis is a research method that includes the careful and systematic examination of all written and non-written sources (Kıral, 2020). Document analysis, which is the most important scanning model in qualitative research, expresses a systematic process such as collecting, classifying, reviewing and analyzing information (Sak, Sak, Sendil, & Nas, 2021). It includes examining, evaluating and interpreting the available data in order to make sense of an accumulated knowledge, to reveal understanding, and to obtain empirical information (Wuetherick, 2010). General tendencies and various ideas on the subject are revealed with the studies carried out as a result of the document analysis (Cepni, 2007).

2.2. Data Collection and Analysis

Only the thesis studies, which are in the national thesis center database and open to the access of other researchers by the researchers who carried out the thesis studies, were included in the study. The scope of the research consists of postgraduate theses by scanning the names of educational thesis containing the expressions “lifelong learning” in the national thesis center database. A search was conducted by entering the keywords life, lifelong, lifelong learning, life, lifelong, lifelong learning in the YOK thesis scanning center. It has been determined that the first thesis study related to Lifelong Learning in Turkey belongs to 2007.

A total of 212 theses related to lifelong learning were identified in the detailed search conducted in the national thesis data center. However, one of these theses was not included in the scope of the study because there was no access permission and 7 of them were out of the field, and the remaining 204 theses were examined. Of these studies, 176 are postgraduate studies, 26 are doctoral studies, and 2 are studies in the field of specialization in medicine. The obtained data were arranged with an Excel document. This document has made the information more systematic and organized. In the Excel document, data were collected under basic headings such as thesis name, year, subject, sample, method, data collection tools, and data analysis. The draft of this document has been submitted for expert opinion. Then the data was transferred to the SPSS 0.25 package program. The findings were converted into tables by performing frequency analysis.

3. FINDINGS

In this part of the research, the findings obtained as a result of the document analysis of the theses are included in the study. The distribution of thesis studies on lifelong learning from 2007 to 2022 by years is presented in Table 1.

Table 1. Distribution of graduate thesis studies by years

Years	*f*	%
2007	1	0.49
2008	4	1.96
2009	2	0.98
2010	2	0.98
2011	3	1.47
2012	4	1.96
2013	2	0.98
2014	8	3.92
2015	9	4.41
2016	15	7.35
2017	23	11.27
2018	17	8.33
2019	49	24.01
2020	21	10.29
2021	19	9.31
2022	25	12.26
Total	**204**	**100.00**

According to the data in Table 1, it is seen that the number of postgraduate thesis studies carried out in the subject areas of lifelong learning has increased significantly since 2016 and reached the highest number in 2019, and the next highest number belongs to 2022. In 2019, the number of theses in the field of LLL increased to 49.

The results of the examination conducted regarding the preferred sample group in studies on lifelong learning are given in Table 2.

Table 2. Sample group distribution of the theses

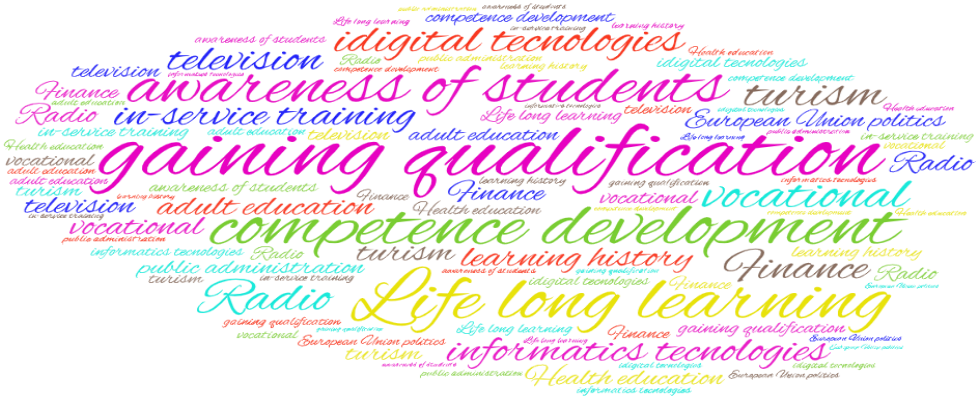
Sample	*f*	%
Teacher	69	30.00
Teacher candidate	32	13.91
University student	27	11.74
Director	19	8.26
Other	19	8.26
Officer	16	6.96
Adult	13	5.65
Trainee	10	4.34
Secondary school student	9	3.91
Parent	6	2.60
High school student	5	2.17
Worker	3	1.30
Primary school student	1	0.43
Master's student	1	0.43
Total	**230**	**100.00**

When we look at the studies focusing on educators who are the designers and guides of lifelong learning teaching environments, it is seen that mostly teachers (30.00%) participate in the postgraduate thesis studies. This rate is followed by studies conducted with pre-service teachers (13.91%) and university students (11.74%). According to the ratios, it is seen that the studies were carried out with the least number of workers (1.30%), primary school students (0.43%) and graduate students (0.43). Regarding the naming of the thesis studies, the words were grouped and it was determined that they were named under two main headings as lifelong learning and lifetime learning. The frequencies and percentages of these concepts are given in Table 3.

Table 3. Concepts used in graduate thesis studies

Naming	*f*	%
Lifetime learning	45	22.05
Lifelong learning	159	77.95
Total	204	100.00

According to the data in Table 3, it was concluded that the concept of lifelong learning (78.00%) was used more than the concept of lifetime learning (22.00%) in the postgraduate thesis studies.



The results of the analysis regarding the subject distribution of studies on lifelong learning are presented in Table 4.

Table 4. Subject information of thesis studies in the field of lifelong learning

Subject	*f*	%
Subject related to gaining qualification or competence development	71	34.80
Lifelong learning awareness of students	42	20.59
Teachers' lifelong learning tendencies	40	19.61
Subjects about digital and informatics technologies	16	7.84
Issues related to vocational and in-service training	7	3.43
European Union politics and lifelong learning in European Union	6	2.94
Lifelong learning history	6	2.94
Health education	5	2.45
Subjects related to adult education	4	1.96
Finance and public administration	4	1.96
Radio and television	2	0.98
Truism	1	0.49
Total	**204**	100.00

It has been determined that the most examined subjects in the thesis studies on lifelong learning are related to competence acquisition or competence development (34.80%), lifelong learning awareness (20.59%), and lifelong learning tendencies (19.61%). The least studied subjects were found to be related to Tourism (0.49%), Radio and television (0.98%), Finance and public administration (1.96%) and Adult education.

When the distribution of theses made between 2007 and 2022 according to the fields of education is examined, it is seen that the theses are made in the fields of master's, doctorate and medicine. Relevant information is shown in Table 5.

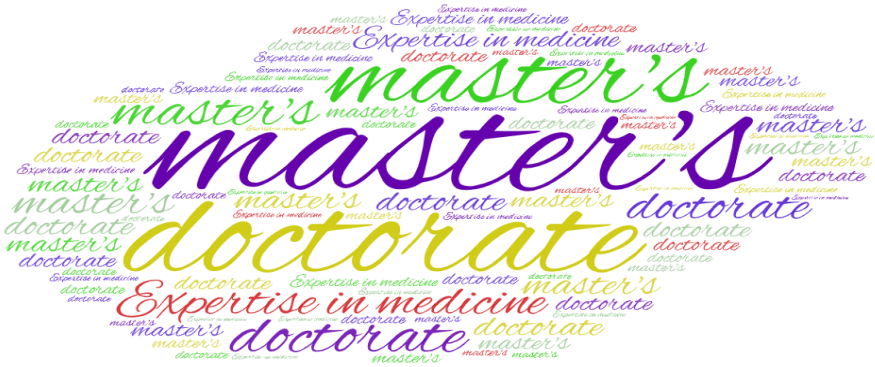


Table 5. Distribution of theses by field

Education Field of Theses	*f*	%
Master's	176	86.27
Doctorate	26	12.75
Expertise in medicine	2	0.98
Total	**204**	**100.00**

It was determined that most of the thesis studies on lifelong learning were done at the master's level (86.27%), followed by doctoral studies (12.75%) and at least in the field of specialization in medicine (0.98%). It has been seen that the research methods used in the thesis studies on lifelong learning are quantitative, qualitative and mixed design. The analysis findings regarding the use of these designs are given in Table 6.

Table 6. Findings regarding the research method used in the theses

Method	*f*	%
Quantitative	148	65.78
Qualitative	33	14.67
Mixed design	44	19.55
Total	**225**	**100.00**

When we study Table 6, it is seen that most of the thesis studies completed between 2007-2022 and conducted in the field of lifelong learning were conducted with quantitative research methods (65.78%). Although there are limited numbers of studies compared to quantitative studies; it has been determined that there are studies designed with mixed research methods (19.55%) and studies designed with qualitative methods (14.67%).

The findings regarding the measurement tools used in the studies conducted with lifelong learning using quantitative, qualitative and mixed research designs are presented in Table 7.

Table 7. Data collection tools used in thesis studies

Method	Measuring Tool	*f*	%
Quantitative	Scale	121	53.78
	Questionnaire	26	11.55
	Achievement test	1	0.44
Mixed	Scale-interview form	26	11.55
	Questionnaire	8	3.55
	Interview form	8	3.55
	Achievement test	2	0.89
Qualitative	Document review	18	8.00
	Interview form	11	4.88
	Discourse analysis	3	1.33
	In-depth interview	1	0.44
Total		**225**	**100.00**

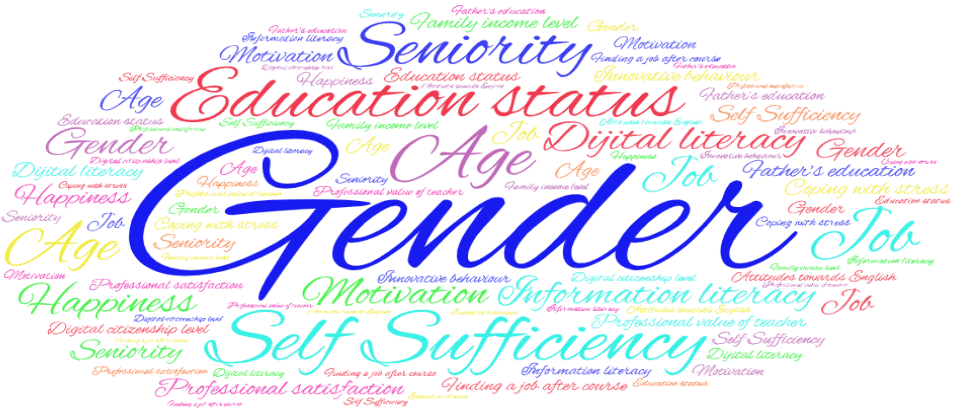
As seen in Table 7, it is understood that quantitative data are mostly collected through scales in studies designed with both quantitative research methods and mixed research methods. However, while documents are the general data source in studies designed with only qualitative research methods, it is seen that the source of qualitative data in mixed research methods is interviews.

The data on the analysis methods of the data collected in the thesis studies on lifelong learning are given in Table 8 for those with a frequency value of 1 and above.

Table 8. Data analysis methods in thesis studies

Data Analysis Method	*f*	%
SPSS	132	25.38
ANOVA	76	14.61
T test	70	13.46
Mann Whitney U	60	11.54
Kruskal Wallis H	52	10.00
Content analysis	33	6.35
Descriptive analysis	19	3.65
Spearman	19	3.08
Regression analysis	14	2.69
Document analysis	12	2.31
Other statistic programs	12	2.31
Shapiro wilk	5	0.96
Tukey test	4	0.77
Excel	3	0.58
Maxoda	2	0.38
Phenomenological analysis	2	0.38
Nvivo	1	0.19
Social network analysis	1	0.19
Discourse analysis	1	0.19
R-studio	1	0.19
Thematic analysis	1	0.19
ANCOVA	1	0.19
Confirmatory factor analysis	1	0.19
Document review	1	0.19
Total	**520**	**100.00**

According to the findings in Table 8, SPSS program was used in quantitative data analysis (25.38%) in postgraduate thesis studies in the field of lifelong learning, as well as ANOVA (14.61%), t-test (13.46%) and Mann Whitney U test (%). 11.54) and Kruskal Wallis test (10.00%). Afterwards, in qualitative data analysis, it is seen that content analysis (6.35%) was performed and then descriptive analysis (3.65%) methods were preferred.



It was determined that there were two main groups, as those with positive and negative relationships, in the study made about the concepts whose relationship was investigated in the theses related to lifelong learning at the postgraduate level. The obtained results are given in Table 9.

Table 9. Results obtained from thesis studies related to LLL

Results	Field	*f*	%
Concepts that have a positive relationship with Lifelong Learning	Gender	14	13.5
	Self sufficiency	9	8.53
	Education status	8	7.80
	Age	7	6.79
	Seniority	6	5.82
	Information literacy	5	4.85
	Digital literacy	5	4.85
	Happiness	4	3.88
	Professional satisfaction	4	3.88
	Motivation	4	3.88
	Father's education	3	2.91
	Professional value of teacher	3	2.91
	Finding a job after course	3	2.91
	Family income level	2	2.00
	Coping with stress	2	2.00
	Innovative behaviour	2	2.00
Concepts that have negative relationship with lifelong learning	Age	7	6.79
	Gender	4	3.88
	Job	3	2.91
	Education status	2	2.00
	Seniority	2	2.00
	Digital citizenship level	2	2.00
	Attitudes towards English	2	2.00
Total		**103**	**100.00**

According to Table 9, among the concepts with a positive relationship obtained in studies on lifelong learning, gender (13.50%), self-efficacy (8.53%), educational status (7.80%) and age (6.79%) stand out. It was concluded that the most prominent of the concepts with a negative relationship were (age (6.79%), gender (3.88%) and occupation (2.91%).

4. DISCUSSION AND CONCLUSION

It is seen that the thesis studies on lifelong learning have been included in the database of the national thesis center since 2007. In the following years, the thesis studies on lifelong learning have increased quantitatively and gradually over the years. It reached the highest number especially in 2019. However, it is seen that there are increases and decreases in some years. In addition, it is seen that the majority of the studies are done as a master's thesis. This situation shows that the need for lifelong learning has increased as a result of the ever-changing needs in our country. Similarly, Ozudogru et al. (2021), in his study examining postgraduate theses on lifelong learning, found that the first thesis belonged to 2007 and it was mostly studied as a master's thesis. In addition, economic and technological developments increase the need for new professions and skills. High-level lifelong learning skills are now needed alongside a diploma. Qualified manpower forms the basis of a strong society. In this sense, it can be said that the high number of theses on lifelong learning in recent years is naturally due to the increase in the need for investment in human capital. Kılınç and Uzun (2020), on the other hand, in their study examining the general tendencies of postgraduate theses written on lifelong learning in Turkey, found that there has been an increase in the number of theses written with the theme of lifelong learning in recent years, but most of the theses written are conducted in a few universities.

Approximately 25% (49 of them) thesis studies conducted since 2007 were carried out in 2019. In 2018, this rate was 8.33% (17). It is thought that the reason why so many studies are carried out on lifelong learning in a year may be the determination of targets such as restructuring lifelong learning and increasing the quality and access to lifelong learning programs in the 2023 Education Vision Document published in 2018. It is seen that the sample of the theses examined is mostly teachers with 30%. Ozturk (2020), in his study examining postgraduate theses on lifelong learning, determined that undergraduate students and teachers were studied as samples in quantitative studies. In the studies, it is thought that the teacher, who is the designer of the educational environment, may be the most studied because the teacher has a key role in the dissemination of lifelong learning to the society.

In the thesis studies examined, it is seen that the subjects related to gaining proficiency or proficiency development are mostly studied ones. Based on the fact that 21st century skills and cross-skills are much more important today, it is natural to deal with the subjects of competence and skill development in thesis studies. When the studies were examined, it was determined that most of the studies were done as master's thesis. Gundogdu, Yuksel, Akyol and Vural, 2016; Ozturk, 2020; Kılınc and Uzun, 2020; Ozudogru et al. (2021). When the data on the research method used in the theses are examined, it is seen that 65% of the theses are quantitative research. Nearly 20% of the studies were mixed. Similar to this result, Kılınc and Uzun (2020) stated that mostly quantitative studies were conducted. The mixed method, in which both quantitative and qualitative studies are used together, allows to expand one's perspective on the situation or event and to obtain more precise and complete information (Baki & Gokcek, 2012). In this context, it can be suggested to carry out studies with multiple approaches by using qualitative and mixed research methods.

When the data collection tools used in the thesis studies are examined, it is seen that scale in quantitative research, scale-interview form in mixed research and document analysis in qualitative studies are preferred most. Similar results were obtained by Gundogdu et al. (2016), Ozturk, (2020), Kılınc and Uzun (2020). In this sense, environments in which various tools can be used together as much as possible can be preferred in the thesis studies. When the data analysis methods in the thesis studies are examined, it is seen that the SPSS program is mostly used. Then ANOVA and t test were used. The least used data analysis method was NVIVO, discourse analysis, document review and confirmatory factor analysis. According to these data, it can be said that in the future studies, the least

and limited used qualitative methods should be included, and even the analysis methods of the mixed method should be utilized. Similarly, Gundogdu et al. (2016) concluded that frequency, mean, percentage and standard deviation are mostly used in quantitative research.

When the results related to lifelong learning are examined in the thesis studies, it is seen that the most results are obtained in the field of gender and self-efficacy. In addition, it was concluded that there is a positive relationship between the concepts of digital literacy, happiness, professional satisfaction and motivation and lifelong learning. Digital literacy is the ability of an individual to use awareness, positive attitude and basic digital skills in a digital environment by creating new information with digital technology and electronic tools (Duran & Ozen, 2018). The positive relationship between digital literacy, which is one of the greatest needs of our age, and lifelong learning may be due to changing human needs.

According to these findings obtained in this sense, lifelong learning activities or programs that will improve individuals' digital literacy skills can be included in formal and non-formal education programs. Activities and sections related to digital literacy skills such as critical thinking, research, questioning, problem solving and decision making can be added to the textbooks. In addition, the conclusion that there is a positive relationship between concepts such as happiness, professional satisfaction and motivation and lifelong learning is a natural result of gaining positive affective skills by becoming aware of one's self-efficacy as lifelong learning skills develop. In this context, the acquisition of lifelong learning skills provides a holistic benefit to the development of the individual. For this reason, the benefits of lifelong learning to individuals can be clearly added to lifelong learning programs and the motivation level of individuals in this regard can be increased.

In seven thesis studies, it was concluded that the concept with the most negative relationship with lifelong learning was "age". This situation has been obtained as a finding in a very limited number of theses. The reason for this may be that people interact more at a young age, but the interaction decreases as they get older. Therefore, some thesis studies have concluded that lifelong learning skills decrease as age increases. However, it is thought that this situation cannot be generalized. It is thought that this study will contribute to the literature due to the importance given to lifelong learning and the need for new and high-level skills of individuals in recent years. It is seen that most of the theses examined in this study are master's theses and the quantitative method is predominantly used as a method. It can be suggested that future studies can also be carried out in the doctoral field and qualitative and mixed method studies can be included. The limitation of this research is the examination of only thesis studies on lifelong learning. Studies in which article and other study trends are examined can be done.

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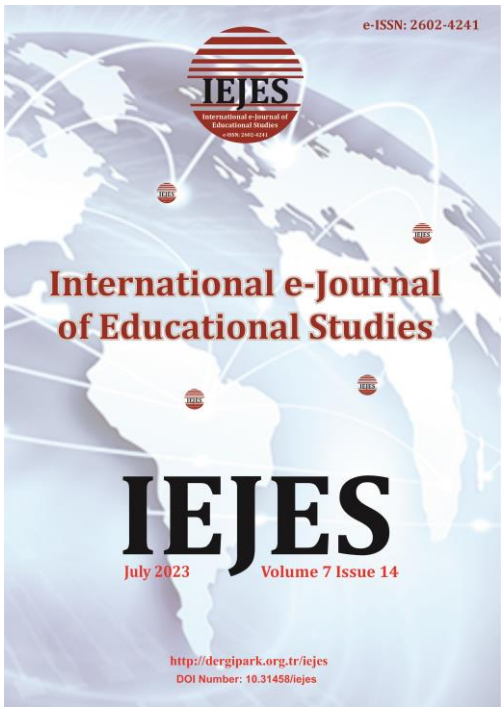

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Abstract

In this qualitative study, ethical problems and ethical dilemmas caused by COVID-19 pandemic restrictions and teaching practices were investigated based on teachers' opinions. The study, which was carried out in October 2022 with 16 preschool teachers determined by the purposeful sampling method, was carried out face to face with a semi-structured interview form. Content analysis method was used in the analysis of the data obtained from the interviews. According to the findings: teachers conducted teaching mostly online during the epidemic and said that the effect was negative. The situations that they do not find ethical are the unequal teaching opportunities on the Internet and the inability to provide classroom management, and mostly family members get involved in online course activities. Children and families were warned about some issues and an attempt was made. Ethical dilemmas are mostly due to the difficulty of children in adapting to online education and the inability to communicate with families, and mostly the inefficiency of online preschool education. Administratively, mostly ethical problems are the lack of technological equality and the inability to be sensitive in epidemic measures. The views that the management does not act unethically are also in the majority. Finally, the teachers wished never to experience such a process again and thanked them for the study. It has been suggested to plan educational measures to overcome extraordinary situations such as epidemics with less damage.

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Research Article

Ethical Problems and Dilemmas Experienced by Preschool Teachers during the COVID-19 Epidemic*

Hatice DARGA [1]

Abstract

In this qualitative study, ethical problems and ethical dilemmas caused by COVID-19 pandemic restrictions and teaching practices were investigated based on teachers' opinions. The study, which was carried out in October 2022 with 16 preschool teachers determined by the purposeful sampling method, was carried out face to face with a semi-structured interview form. Content analysis method was used in the analysis of the data obtained from the interviews. According to the findings: teachers conducted teaching mostly online during the epidemic and said that the effect was negative. The situations that they do not find ethical are the unequal teaching opportunities on the Internet and the inability to provide classroom management, and mostly family members get involved in online course activities. Children and families were warned about some issues and an attempt was made. Ethical dilemmas are mostly due to the difficulty of children in adapting to online education and the inability to communicate with families, and mostly the inefficiency of online preschool education. Administratively, mostly ethical problems are the lack of technological equality and the inability to be sensitive in epidemic measures. The views that the management does not act unethically are also in the majority. Finally, the teachers wished never to experience such a process again and thanked them for the study. It has been suggested to plan educational measures to overcome extraordinary situations such as epidemics with less damage.

Keywords: Preschool teacher, Preschool child, ethical problem, ethical dilemma, COVID-19 epidemic

1. INTRODUCTION

Upon the rapid spread of new coronavirus cases to the countries of the world, the World Health Organization (2020) described the situation as a Public Health Emergency of International Importance on January 30, 2020, and a pandemic on March 11, 2020. The first case in Turkey was announced by official authorities in March 2020. After the confirmation of the first case, the practices affecting many areas of life in Turkey are the measures such as the holidays of universities and schools, shift work in public institutions, the transition of places such as restaurants and patisseries to takeaway services, and the closing of crowded environments such as shopping centers and mosques to the public. Many posters, brochures and study guides, especially describing hand and respiratory hygiene, prepared by the Ministry of Health (2020) for virus protection, are published in the media, in open areas, at the entrance to institutions, workplaces, etc. The awareness of the public was increased by hanging them in visible places, professional content was prepared for health workers and teachers, and information and protection support was provided with presentations and trainings. These measures are important to prevent the spread of the epidemic (Russell, Zheteyeva, Gao, Shi, Rainey, Thoroughman, Uzicanin, 2016). It is especially critical in the education of young children, where hand hygiene and social distancing are less common. Preschool education institutions in Turkey provide full-time or part-time

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services to children aged 3-6. With the sudden effect of the COVID-19 epidemic, the Turkish education system, including preschool education institutions, closed schools on March 16, 2020; has started to conduct teaching online, as in many countries (United Nations Educational, Scientific and Cultural Organization [UNESCO], 2020). After the spring semester with distance learning in June 2020, kindergartens reopened in August 2020.

COVID-19 has been an unprecedented experience due to the inherent unpreparedness for a global pandemic and the need for rapid and multifaceted responses. The unpredictable effects of the pandemic have also caused unique challenges and problems in the lives of young children, leading to the implementation of preschool education in different ways (Muller & Baum, 2020; Silverman, Sibbald & Stranges, 2020; United Nations International Children's Emergency Found [UNICEF], 2020). Children in Early Childhood (EC) are the most vulnerable group as they often do not respond positively to online learning and are in a critical period of social, cognitive and mental development. Reopening schools for these young children at low risk of infection in the epidemic should be seen as an urgent priority (Silverman et al., 2020). Decisions and practices taken to protect children should not expose them to new problems.

The statement on the international platform as "The epidemic is a health crisis that is rapidly turning into a crisis of children's rights" drew attention to a very important ethical problem. With the closure of schools, unemployed parents and families are under pressure, with the addition of restrictions, the mental health and psychosocial effects of isolation, especially of children, are already evident. Stressed that urgent action should be taken to protect it from the knock-on effects of the crisis (UNESCO, 2020). On the other hand, steps must be taken very carefully in order for the regulations to be made in favor of young children to have positive effects.

UNESCO (2020), has recommended that, "in order to be safer in school reopening, it is important to collect quick information on how teachers, staff and parents are coping with the epidemic and closures, and to take this information into account to determine the most useful and applicable program." With the restrictions imposed on daily life during the COVID 19 epidemic, the periodic conduct of teaching with different practices has confronted teachers with new challenges. Preschool educators face many problems while working with children and families. This exposes them to many daily decisions with moral and ethical consequences.

When faced with an ethical problem, it must first be determined whether it is an ethical responsibility or an ethical dilemma. Ethical responsibility is the rules that explain how people should behave when faced with a problem. Ethical dilemma is a state of moral conflict that involves determining appropriate behavior when faced with conflicting professional values and responsibilities. In the case of an Ethical Dilemma, one of two possible solutions with a moral basis is decided (NAECY, 2020). The US National Association for the Education of Young Children-NAEYC has declared its ethical responsibilities, principles and ideals to children and families, and has declared its most important responsibility as" providing care and education for every child in a safe, healthy, nutritious and caring environment." It also provides a common basis for resolving key ethical dilemmas in the care and education of young children (CECE, 2020; NAEYC, 2020). Codes of ethics define the core values of the field for professionals with specific obligations to their society and provide guidance on what to do when faced with conflicting responsibilities in their work. The most important principle of EC educators' responsibilities to children is "First of all, we will not harm children" (NAECY, 2020). The ethical principles of teaching as a profession provide a basic framework such as professionalism, responsibility in service, justice, equality, ensuring a healthy and safe environment, non-corruption, honesty, integrity and trust, objectivity, professional commitment and continuous improvement, respect and effective use of resources (Aydın, 2013). The conditions of teaching in ordinary and unusual periods of teachers may affect the applicability of these principles positively or negatively.

Studies conducted with preschool teachers in Turkey during the COVID-19 pandemic (Acar, Erbaş & Eryaman, 2021; Akkaş-Baysal, Ocak, & Ocak, 2020; Aral & Kadan, 2021; Erdemci & Elçiçek, 2022; Gülhan, Sevinç, Karan, Çetken & Menteşe, 2021; Güneş & Kaya, 2022) the problems experienced by teachers in online teaching in general, the content of the applied curriculum and preschool addressed the issues of evaluation of the curriculum. Similarly, studies conducted in other countries (Eadie, Levickis, Murray, Page, Catriona, Church, 2021; Jones, 2020; Nikolopoulou, 2022; Stoiljković, 2020) also focused affected the effects of the epidemic and teaching practices. In the current studies, no attempt has been seen to focus on what ethical problems and ethical dilemmas preschool teachers experience while conducting education during the epidemic, and how children are affected by administrative and family-related ones, and how teachers intervene by producing solutions.

This study focuses on identifying the ethical problems and ethical dilemmas that preschool teachers encounter during the COVID-19 epidemic and while teaching, where and from whom they originate, how children are affected by them, and solution attempts. The questions of the research carried out for this purpose are given below:

Research Questions

1. What was the way preschool teachers were working during the epidemic and how did it affect them?
2. What are the ethical problems that preschool teachers face during the epidemic?
3. What are the ethical dilemmas that preschool teachers face during the epidemic?
4. What are the ethical problems that preschool teachers have in terms of children in their classrooms?
5. What are the ethical dilemmas experienced by preschool teachers in terms of children in their classrooms?
6. What are the ethical problems and ethical dilemmas that preschool teachers experience with their families?
7. What are the ethical problems and ethical dilemmas that preschool teachers experience administratively?
8. What are the general evaluations, feelings and solution suggestions of the preschool teachers regarding the epidemic period?

2. METHOD

In this study, phenomenology, one of the qualitative research methods, were used to determine which ethical problems preschool teachers encountered while carrying out their duties during the COVID-19 epidemic period and in which situations they remained in ethical dilemmas. The aim of qualitative research is to reveal the perceptions and experiences of the participants (Yıldırım & Şimşek, 2016; Patton, 2018). Phenomenology, one of the main perspectives of qualitative research, aims to understand people's experiences (Van Manen, 2007). Phenomenology, which focuses on the explanation and description of phenomena (Yıldırım & Şimşek, 2016), reveals and explains the deeper, human aspects of a situation, deals with mood, feelings and emotions (Wilson, 2015). The most basic features of phenomenology are that it defines the basic meaning and essence of common experiences and includes philosophical discussions (Patton, 2018; Yıldırım & Şimşek, 2016).

Purposeful sampling, one of the most effective non-random sampling methods (Robinson, 2014), was used to determine the participants of this study. Inclusion criteria are being a preschool teacher and working in a school. 16 preschool teachers participated in the research. The potential participant group was limited to those who were active in teaching during the epidemic period. These participants were defined by demographic information. Teachers were asked about their education

levels, branches and places of duty, as well as their working experience and the age group they teach. Table 1 presents the characteristics of 16 preschool teachers in the study. All of the teacher participants are undergraduate graduates, of which 14 are female and 2 are male. In terms of the type of school, 10 teachers work in public schools and six teachers work in private schools. Five teachers have working experience of 20 years or more, six teachers between 10 and 20 years, and five teachers between two and nine years. In terms of the teaching group, four teachers teach the five-six age group in kindergartens, and twelve teachers teach the Three-six age group in kindergartens.

Table 1. Demographics of preschool teachers

Participant	Gender	Education level	School type	Work experience	Department	Teaching group	Age group
teacher 1	Woman	University	State Primary School	20	Preschool	Kindergarten	5-6 years old
teacher 2	Woman	University	public primary school	21	Preschool	Kindergarten	5-6 years old
teacher 3	Woman	University	State Kindergarten	14	Preschool	Nursery	4-5 years old
teacher 4	Woman	University	public primary school	20	Preschool	Kindergarten	5-6 years old
teacher 5	Woman	University	Private Kindergarten	14	Child Development	Nursery	3- 6 years old
teacher 6	Woman	University	public primary school	30	Preschool	Nursery	5 years old
teacher 7	Woman	University	State Kindergarten	11	Preschool	Nursery	3- 6 years old
teacher 8	Woman	University	Private Kindergarten	10	Preschool	Nursery	3- 6 years old
teacher 9	Woman	University	State Kindergarten	14	Preschool	Nursery	4-5 years old
teacher 10	Woman	University	Private Kindergarten	3	Preschool	Nursery	3- 6 years old
teacher 11	Woman	University	State Kindergarten	14	Preschool	Nursery	3- 6 years old
teacher 12	Woman	University	Private Kindergarten	3	Preschool	Nursery	3-6 years
teacher 13	Man	University	public primary school	7	GPC*	Nursery	5-6 years old
teacher 14	Woman	University	Private Kindergarten	2	Preschool	Nursery	3- 6 years old
teacher 15	Man	University	Private Kindergarten	4	Preschool	Nursery	3-6 years
teacher 16	Woman	University	State Primary School	31	Child Development	Kindergarten	5-6 years old

** Guidance and psychological counseling*

2.1. Procedure

The interview questions created after the literature review were taken from three academicians in the field of educational sciences and two experts in the field of preschool, and necessary arrangements were made. Afterwards, a pilot study was conducted with three preschool teachers and the clarity of the questions was evaluated. After the final arrangement, the interviews of the research started. Semi-structured interviews (Creswell, 2013) were conducted with each of the preschool teachers. This study was conducted at the end of the epidemic period, when schools resumed face-to-

face education and restrictions on social and physical distancing were eased. Therefore, face-to-face interviews were conducted with the participants. Each interview lasted between 20 and 30 minutes. Before the interview questions, the teachers were informed about the purpose of the research and they agreed to participate in the research voluntarily. Interview questions include answers to designed to reveal how teachers work during the COVID-19 pandemic and how they are affected, what ethical problems and ethical dilemmas they face in this academic period, which of them are administrative or family related, what teachers do in these situations, and how children are affected by the practices in this period. Table 2 contains specific questions asked during the interview.

Table 2. Interview Questions

1. How did you do your job during the epidemic? (Face-to-face/remote etc.). How has this situation affected you?
2. What were the ethical problems you faced as an educator during the epidemic? What did you do about it? What do you think should have been done administratively?
3. What are the situations in which you are in ethical dilemma during the epidemic? Why are you in dilemma?
4.What were the ethical issues for the children in your class? What did you do about it? What do you think would have been more fair?
5. What were the ethical dilemmas about the children in your class? How did you behave?
6. In your opinion, if there were any unethical and dilemma situations for families regarding the teaching process during the epidemic, what were they? If an attempt has been made regarding this, what has been done? What would have been better?
7.What were the administrative ethical problems in your opinion during the epidemic? What could be done?
8. What else would you like to say?

The data were collected by face-to-face individual interview technique. Interview is the activity of expressing the feelings and thoughts of the individuals participating in the research on a certain subject. Through interviews, it is aimed to reach unobservable information such as the experience, attitude, thoughts, comments, mental perceptions and reactions of the individual about the research topic (Sönmez & Alacapınar, 2011).

The interviews were recorded in writing and read to the participant and the answers were confirmed. The privacy of the participant was protected by coding each interview form as T1, T2. The data were subjected to content analysis method. Codes, categories and themes (Creswell, 2013) were created by starting the exercise of making sense of the data. In order to ensure reliability in the analysis of the data of the research, the coding was done by three researchers. The categories were created by coding the data within the framework of the upper categories determined by using the questions of the research. While creating the data, codes and categories, they were read many times, and the codes and categories were rearranged. In the Miles and Huberman model, the consensus among coders is expected to be at least 80%. Consensus and similarity rate (Miles & Huberman, 1994; Patton, 2014) in the data coding of the research was calculated and the agreement percentage was found as .90. The findings were interpreted and tabulated within the framework of upper categories, categories and codes. At the last stage, examples from teachers' statements were given to support the upper categories and categories.

2.2. Ethical Issues

Ethics Committee Approval was obtained from Burdur Mehmet Akif Ersoy University with the decision number GO2022/882 at the meeting dated 05.10.2022 and numbered 2022/10 in order to carry out the research. Then, interviews were made with the directorate of national education and the school administration. Informed consent was obtained from preschool teachers. The purpose of the research, confidentiality and voluntary participation were detailed in the consent form. The teachers were told that they could not answer the question they did not want. The teachers answered all the questions and completed the interview.

3. FINDINGS

In this study, the ethical problems and ethical dilemmas experienced by children, families and administration in the conduct of preschool education of the COVID-19 epidemic were examined according to the evaluations of preschool teachers. Theme category/theme, category and subcategories that emerged in the analysis of the interview data are given in Table 3.

Table 3. The total themes, categories and subcategories of the research

Theme	Categories	f	Subcategories	f
The way of working and the effect of teachers during the epidemic period	Method of teaching	16		
	Effect	13		
Ethical issues, administrative requirements and teacher intervention during the epidemic period	Ethical issues	29	Administration	12
			Behavior of families	10
			Course effectiveness	7
	Administrative requirements	10		
	teacher's initiative	6		
Situations where teachers are in ethical dilemmas	Online teaching	8		
	Communication and privacy	8		
	Online course intensity	5		
	Compliance with Pandemic rules and other	4		
Ethical dilemmas of teachers about children	Ethical dilemmas	16		
	Intervention behaviors	5		
Ethical issues and ethical dilemmas related to families	Family member attending class	17		
	Responsibility of the family	14		
	Communication with the family	14		
	Teacher's suggestions	4		
Managerial ethical issues	Ethical issues arose	12		
	What could be done?	9		
	No unethical situation	5		
General evaluation and feelings of preschool teachers	The epidemic period	9		
	Education period	8		
	Teaching from the Internet	7		
	Emotions	5		

Table 3 shows a total of 7 upper categories/themes, 22 categories and 3 subcategories of the research.

In Turkey, preschool education in public institutions serves as a kindergarten within primary schools and as a kindergarten in an independent building. During the COVID-19 pandemic, preschool education was mostly conducted online. Participation in this course is not compulsory. During the epidemic, kindergartens in its own building continued face-to-face teaching. In addition, kindergartens were opened in certain regions for the needs of families who continue to work during the epidemic. Table 4. presents the teachers' views on the way they carried out teaching in the said period and its impact.

Table 4. The mode of work of preschool teachers during the epidemic period and its impact

Theme: Teachers' working style and impact during the epidemic period		
Categories (f)	**Codes**	**f**
Method of teaching (16)	Online teaching during the pandemic period (T1, T3, T4, T6, T9, T11)	6
	The first six months are online then face-to-face teaching (T10, T12, T14, T15)	4
	Partly online, partly face-to-face teaching (T13, T16)	2
	Face-to-face half-term, then online teaching (T2, T7)	2
	Face-to-face training (T5, T8)	2
Influence (13)	Negatively affected (T1, T2, T4, T8, T9, T11, T12, T14, T16)	9
	It was fruitful (T3, T5, T6)	3
	There was no effect on (T15)	1

According to Table 4, opinions on the conduct of preschool education during the epidemic were collected in the categories of Teaching Style (16) and Effect (13). According to the findings, preschool education was carried out in five different ways in Turkey during the epidemic period, and the effects of these practices were mostly evaluated as negative.

T9: We conducted our training remotely during the epidemic. We didn't get much from the students. For some reason, the students could not get efficiency from us (state kindergarten, four- five years old teacher, 13 years of experience)

T16: Some distance education and some face-to-face training were given two days a week. This had a bad effect (State Primary School, Four- five years old teacher, 31 years of experience).

T7: Half-term face-to-face, 40 minutes online training three days a week every 12 weeks (Government kindergarten, Three-six years old teacher, 11 years of experience).

T8: We continued face-to-face training. Due to the epidemic, this situation affected us negatively (private kindergarten, Three-six years old teacher, 10 years of experience).

According to the opinions of the teachers, the situations experienced during the epidemic, what the ethical problems are, where or from whom they originate, how they affect the teacher, expectations and solution attempts. These determinations gathered under five categories and three sub-categories are given in the Table 5.

Table 5. Ethical problems experienced by preschool teachers during the epidemic period

Theme: Ethical issues, administrative requirements and teacher intervention during the epidemic

Categories (f)	Subcategories	Codes	f
Ethical issues (29)	Administration (12)	The lack of equal opportunities for teaching via the Internet (T4, T6, T7, T13)	5
		Lack of attention of teachers and school administration to vaccinations and tests (T10, T12, T14)	3
		Frequent opening and closing of schools disrupts education (T8, T16)	2
		The school administration must have additional courses (T14)	1
		The arrival of a teacher with virus symptoms at school (T10)	1
	Behavior of families (10)	Sending coughing and sick children to school (T10, T12, T14)	3
		Unauthorized participation of families in the lesson and to do the activities (T9, T11, T15)	3
		Families refuse or do not attach importance to online education (T4, T7)	2
		Maintaining the home state (clothing and behavior) of the family and children in the course (T2, T3)	2
	Course effectiveness (7)	Failure to ensure classroom management (T2,T3,T9,T11,T7)	5
		Activities are not productive because they are not performed face-to-face (T3, T11)	2
Administrative requirements (7)		More attention could have been paid to vaccines and tests (T12, T14)	2
		The management's follow-up of the process prevented problems (T1, T2)	2
		The Internet could have been given more importance (T4)	1
		A large class could have been given to match the social distancing (T16)	1
		The duration of education could have been balanced between private school and public school (T5)	1
Teacher's intervention (6)		Warning the child and the family about some issues (T2, T11, T15, T16)	4
		Preparing accelerated programs as schools open (T8)	1
		Switching off cameras due to income level difference (T13)	1

The categories in the table are, in order, Ethical issues (29), Administrative requirements (10), and Teacher intervention (6). Ethical problem category is divided into subcategories of Social and administrative (12), Behavior of families (10 codes), and Lesson effectiveness (7). According to the findings, while the majority of the ethical problems during the epidemic were the inequality in teaching opportunities and the inability to provide classroom management, the expectations were that sufficient internet could be provided and the solution attempts were to warn the child and family on some issues. Some of the views are that it is unethical for families to send sick children to school and to be included in the lesson without permission.

T15: To listen to the lessons given on the EBA (education information network) *platform with online teaching without the permission of the parents, to intervene, to be in front of the camera in every way without realizing that their home situation is in the online classroom environment (Private Kindergarten, Three-six years old teacher, 4 years experienced)*

T3: In online teaching, children had attention spans and family comfort, activities were not productive because they were not face-to-face (Public Kindergarten, Four- five years old teacher, 13 years experienced)

T6: Equal opportunities were not provided to everyone. Most people did not have a tablet, phone or internet (Public primary school, 5 years old teacher, 30 years of experience)
T14: Children who were coughing and sick were able to come to school. Families were not paying attention to this. The school administration was putting on an additional lesson. Teachers were not paying attention to vaccinations and tests. The school administration was a little insensitive about this (Private Kindergarten, Three-six years old, two years experienced).

Preschool teachers' views on the situations in which they are in ethical dilemmas while conducting education during the epidemic period are collected in four categories given in Table 6.

Table 6. Situations in which preschool teachers experience ethical dilemmas

Theme : Situations where teachers are left in an ethical dilemma

Categories (f)	Codes	f
Online Teaching (10)	Moving the teaching process to the screen while the screen is not normally used (T8, T6, T9)	3
	Teaching on the screen is inefficient, but it continues (T6, T9)	2
	Performing activities not in concrete, but in front of the screen (T6, T9)	2
	The fact that online teaching increases negative behaviors in a child (T1, T16)	2
	While the danger of screen addiction is emphasized, conducting education from the Internet (T8)	1
Communication and privacy (11)	Children acting at home while the camera is on in the course (T2, T3, T15)	3
	The dilemma in the efficiency of communication with students (T1, T2)	2
	Dilemma about family communication (T3, T7)	2
	The dilemma about the parent (T2, T16)	2
	The dilemma about privacy (T2)	1
	Involving a neighbor or someone else in the lesson on the Internet (T16)	1
The intensity of online lessons (5)	The dilemma caused by not wanting to study due to fatigue (T12, T15)	2
	Not wanting to do additional classes online due to fatigue (T12, T15)	2
	The school administration must have additional courses (T15)	1
Compliance with rules and other (4)	Refusal to undergo tests or go to the hospital despite symptoms of the virus (T10, T14)	2
	I was not left in an ethical dilemma (T5, T11)	2

In Table 6, the categories are listed as online teaching (8), communication and privacy (8), online course intensity (5), compliance with epidemic rules and other (4). Opinions are generally close to each other. According to the findings, teachers stated that they experience ethical dilemmas in preschool education being online and inefficient, communicating with children and families, conducting online education and complying with epidemic rules.

T1: I have been in dilemmas in terms of whether I can communicate efficiently with my students as I want. I didn't want the things I told to remain in the air (Public Elementary School, Five-six years old teacher, 20 years experienced).
T2: There have been situations when I have been in a dilemma about privacy, about parents. There have been cases when I have not been able to fulfill some of Veli's wishes. For example, asking for the lesson to be repeated

when the student cannot attend the lesson during class time (State Primary school, Five-six years old teacher, 20 years experienced)

T14: People with flu or illness symptoms should not go to the hospital and get tested, saying I'm not sick (Private Kindergarten, Three-six years old teacher, two years experienced).

The two categories and codes in which teachers' views on situations affecting children and their attempts to solve them are collected are presented in Table 7.

Table 7. Situations in which a preschool teacher finds themselves in an ethical dilemma for the children in his classes

Theme:	Ethical dilemmas of teachers related to children	
Categories (f)	**Codes**	**f**
Ethical dilemmas (14)	Children have difficulty adapting to online teaching (T1, T3, T5, T7, T9)	5
	Staying away from the sick child who does not come to school clean (T10, T12, T14, T15)	4
	Being close to children who come to school clean (T10, T14)	2
	Thinking of online teaching as a dilemma (T6, T16)	2
	Parent's refusal of the school's COVID-19 test request (T8)	1
Intervention behaviors (5)	To say that the current situation is temporary (T1)	1
	Sending a message to the family for children to attend the lesson (T1)	1
	Sending a child who is sick to school back to his home (T8)	1
	To take care of the child who comes to school sick so that he is not badly affected (T15)	1
	Trying to learn the effect of online teaching course from family (T16)	1
Other (2)	There is no ethical dilemma (T11, T13)	2

Ethical dilemmas (14), Solutions (5) and Other (2) categories are listed in Table 7. According to the findings, the majority of ethical dilemmas are that children have difficulty in adapting to online education and avoiding children who are ill and not clean at school. The teacher's attempts to solve ethical dilemmas are in five different ways.

T1: my students were forced to adapt to, and this situation is temporary, I tried to comfort them by telling them we'd be back together soon (State Primary School, 5-6-year-old teacher, 20 years experience).
T8: When symptoms such as fever and cough occurred in children during the pandemic period, situations such as whether the child has COVID-19 or not created an atmosphere of panic at school. In this case, the parent was informed and asked to take the child out of school and take the test. But the fact that some parents did not want to take the test and brought the child back to school the next day created a dilemma at school. We also compulsorily sent the child back home (private kindergarten, Three-six years old teacher, 10 years experienced).
T15: I didn't want to be too interested in the student who was sick, but I was still interested, saying that this situation would affect the child badly. I was in a lot of dilemmas in this part (Private Kindergarten, Three-six years old teacher, four years experienced).

According to the teachers' views, unethical and dilemma situations related to families are presented in Table 8 as four categories.

Table 8. Ethical problems and ethical dilemmas experienced by preschool teachers about families

Theme: Ethical problems related to families and situations that create dilemmas

Categories (f)	Codes	f
Behavior in the lesson (17)	Family members getting involved in online course activities (T1, T3, T5, T6, T11, T16)	6
	Distractions of families during the lesson (T1, T2, T4, T11)	4
	The negative effect of the family's help in the activities on the child (T3, T11)	2
	The intervention of the family in front of the screen affects the teacher badly (T1)	1
	Inability of the illiterate family to be included in the lesson (T14)	1
	Parents' interference with the content of homework (T4)	1
	Teacher's involvement with parents in setting assignments (T11)	1
Responsibility of the family (14)	Working families do not spare time for children (T4, T12, T14, T16)	4
	Not providing the necessary technical infrastructure for online teaching (T2, T8)	2
	Not providing a separate room for the lesson (T2)	1
	The child is not prepared on time with appropriate clothes for the online lesson (T2)	1
	The negative effect of the noise at home on the lesson and the teacher (T1)	1
	Sending the sick child to school (T15)	1
	Not using the internet for educational purposes (T7)	1
	The events between the family during the lesson (T6)	1
	Discussions of families in online meetings (T13)	1
Communication with the family (14)	Experiencing a dilemma because families cannot be contacted (T2, T4, T9, T10, T12, T13, T14, T15, T16)	9
	Warn the family communication group so that the child and the environment are suitable for the lesson (T2,T4)	2
	Asking for help from the school administration for the family that could not be reached (T15)	1
	The fact that parents are not allowed to school negatively affects communication (T10)	1
	School holidays while working in the field of health and safety continues (T8)	1
Suggestions of the teacher (4)	It was possible to communicate with the teacher (T12, T14)	2
	Encouraging the family to give responsibility to the child (T9)	1
	Having a school or center open for family children working in the field of health and safety(T8)	1

The categories in Table 8 are Behaviors in the Lesson (17 codes), Responsibility of the Family (14 codes), Communication with the Family (14 codes), and Teacher's suggestions (4 codes). According to the findings, teachers experienced ethical dilemmas mostly because they could not communicate with the family, and some opinions said that the distraction and intrusive behavior of the parents in the lesson and not spending time with their children created a dilemma. Few opinions are that not making the child and home environment suitable for the lesson causes ethical dilemmas.

T1: Because the parents were also in the online class, they were also talking in the class. It was more difficult for me to teach in the noise. Because telling lessons in front of them is different from the one-to-one communication I established with my students at school, I was also struggling whether I wanted to or not (Public Elementary school, Five-six years old teacher, 20 years experienced).

T4: I was quite annoyed that some of the families did not give the online classes the necessary importance. Because although they did not prevent their children from getting an education, I would say that the housework they made them do, the parents doing things that would distract the child's attention, disrupted the child's concentration. I have had the necessary conversation with the families about this. But the result did not turn out quite the way I wanted. We found the common way with some families, but others were hopeless cases (Public Elementary School, Five-six years old teacher, 20 years experienced).
T15: They should not have sent their sick children to school, but they did. We tried to contact about this, but it was not effective. It was necessary not to be admitted to the school (Private Kindergarten, Three-six years old teacher, four years experienced).

Opinions on management-related situations during the epidemic period are presented in table 9 under three categories.

Table 9. Managerial ethical problems during the epidemic period

Theme:	Administrative ethical issues	
Categories (f)	**Codes**	**f**
Ethical problems (12)	The administrator's taking the sick child to school (T15, T14, T12)	3
	Experiencing a lack of environment at school (T8, T16, T14)	3
	The unequal technological opportunities (T6, T7)	2
	Some schools provide tablet and internet facilities to their students (T4)	1
	Management is very strict about mask, distance and cleaning (T10)	1
	Having difficulties in reaching students (T5)	1
	The lessons are not productive (T5)	1
What could be done? (10)	Mask, distance and cleaning measures could have been more sensitive (T12, T14, T15, P16)	4
	Equal technological opportunities would provide equality and full efficiency (T4, T6)	2
	In villages, the teacher could take homework (T5)	1
	A large classroom and open air environment could be provided (T2, T16)	2
	Class size could have been reduced (T14)	1
No unethical situation (5)	There was no unethical behavior of the management (T1, T2, T3, T9, T13)	5

The categories in Table 9 are Ethical problems experienced (12), What could be done (9), and No unethical situation (5), in order. According to the findings, statements about ethical problems during the epidemic period are in the majority, and solution suggestions are in the form of expectations from the management. Some of the opinions were also gathered in the category that there is no unethical situation.

T2: There were no problems administratively. The manager followed the process in a relevant way. But when the weather started to get better, classes could be held outdoors (Public Elementary School, Five-six years old teacher, 21 years experienced).
*T8: **Since** the dining hall and sleeping rooms are the only ones, there was a lack of environment in the pandemic (private kindergarten, Three-six years old teacher, 10 years experienced).*
T12: It was unethical for the administration to take the sick child to school because it made us worry too. The administration could have acted more sensitively (private kindergarten, Three-six years old teacher, three years experienced).
T16: Classes could have been held in larger classes because, despite the pandemic, there was a lot of contact with children, whether they wanted to or not, which was unethical (Public Elementary School, Five-six year old teacher, 31 years of experience).

Teachers' free evaluations and feelings about the epidemic period and preschool education were gathered under four categories and presented in Table 10.

Table 10. Assessments and feelings of preschool teachers about the epidemic period

Theme: General evaluation and feelings of preschool teachers

Categories (f)	Codes	f
Epidemic period (9)	I wish not to experience such a process again (T1, T4, T7, T10, T12, T16)	6
	The epidemic process was difficult (T3, T13, 3 T16)	3
Education period (8)	Face to face education must be (T2, T3, T4, T5, T9, T11)	6
	Distance education was inefficient (T2, T9)	2
Online Teaching (7)	Difficulty in communication (T3, T14)	2
	The technological infrastructure was not sufficient (T3, T14)	2
	Technological possibilities could be equalized (T6, T14)	2
	The opportunities of the students were not equal (T6)	1
Emotions (5)	Thank you (T1, T4, T8, T12)	4
	Good luck with your effort (T4)	1

In Table 10, the views in the categories are close to each other, as Epidemic period (9), Preschool education (8), Online education (7) and Emotions. According to the findings, while the teachers wished not to experience the epidemic period again, they said that preschool education should be face-to-face, there were difficulties in online teaching and communication, and finally they thanked for the study.

T3: The epidemic process was a difficult period, the families did not participate very effectively. There were difficulties in communication, timely attendance was not provided, there were attachment problems, but they were overcome in time. I always support face-to-face education in preschool education (State kindergarten, Four- five years old teacher, 13 years experienced).
T4: First of all, I would like to thank you and your esteemed teacher for preparing this interview, thank you for your hard work. Apart from that, the last thing I want to say is, I hope we will not face a problem like an epidemic again, and students and teachers will continue their education in schools. Because the education given at school is very important for me (State primary school, Five-six years old teacher, 20 years of experience).
T9: Education should always be face-to-face in the preschool period. The education process was inefficient due to the fact that students were distracted and could not concentrate in online education (state kindergarten, 4-5 year old teacher, 13 years of experience).

4. DISCUSSION and CONCLUSION

The findings of this research show that preschool teachers experience ethical problems and remain in ethical dilemmas while teaching during the COVID-19 epidemic, and they take responsibility to solve them. The results of this study show that preschool teachers conduct teaching in five different ways during the COVID-19 pandemic. Teachers stated that they carried out their duties

mostly online, some of them online for the first six months, then face-to-face teaching. Two of the few views are blended and face-to-face teaching. Similarly in the literature, Means, Bakia and Murphy, (2014) defined online learning design options as fully online, blended, mixed and Web-enabled F2F (friedend 2 friend) (Trm. Hodges, Moore, Locke et al., 2020). UNICEF (2020) explained the situation in the countries as "According to the course of the epidemic, schools were reopened, closed again due to the spread of the virus, or hybrid teaching methods were tried". During the epidemic period, kindergartens designated for the children of working families in Turkey served (MoNE, 2020; 2022). Jones, (2020) and Silverman, et al. (2020) also determined that similar applications were made in the USA and Canada, Zorec and Peček (2022), in Slovenia. By contrast, in Taiwan, the outbreak was successfully controlled without widespread school closures (Everington, 2020). In the second finding of this research, teachers generally evaluated the effect of teaching practices during the epidemic period as negative, while a few said that they were productive. Results of similar studies (Jones, 2020; Yazıcı, Keskin & Gelişli, 2022) support this finding. In studies containing similar and different findings, it was determined that besides teachers' positive and negative feelings (Nikolopoulou, 2022), children enjoy being with their families and relatives (Zorec & Peček, 2022).

This research shows that preschool teachers experience ethical problems in online and face-to-face teaching during the epidemic. The majority of the teachers said that they do not find it ethical that the teaching opportunities are unequal, and some that the school administration, teachers and families do not comply with the epidemic rules. Similarly, in studies conducted (Aral & Kadan, 2021; Hughes, 2020; Jones, 2020; Nikolopoulou, 2022; Russell et al., 2020), technology and internet-related infrastructure problems is the dominant difficulty and the most common problem. Findings indicated that preschool teachers mostly did not find classroom management to be provided, and some of them did not find it ethical for families to participate in online classes and activities without permission. In support of this finding, Sezgin (2022) determined in his study that the lack of body language and the inability to create a classroom climate among teachers and children negatively affect focus. In Jones' (2020) research, parents said that the time spent by children in front of the screen is longer, children are bored and their social participation decreases. According to the findings, some of the teachers said that families do not care about distance education and that the child and family behave sloppy. In similar studies (Aral & Kadan 2021), it has been determined that parents experience negative emotions and effects and that the lack of participation is significant. Yazıcı, Keskin & Gelişli (2022) determined that online teaching has negative aspects in terms of teachers, children and families. According to the findings, teachers generally tried to maintain order and solve ethical problems by warning the child and family. Teachers tried to apply the principle of justice and equality (Aydın, 2013), one of the principles of professional ethics. In the other finding of this research, some of the teachers expressed their expectations from the administration in such a way that more importance could be given to the internet, and that they could pay more attention to vaccines and tests.

The results of this research expressed the situations in which preschool teachers were in ethical dilemmas during the epidemic, as the teaching process was moved to the screen when the screen was not used in the preschool, and it was continued even though it was inefficient. Similarly, Lavidas, Apostolou and Papadakis (2022) determined that digital tools used in preschool mathematics teaching were used less after face-to-face teaching. Another finding related to the ethical dilemma is the efficient communication of some of the teachers with children and families. In the literature, due to the negative effects of the epidemic in the social, emotional and communication fields (Yazıcı et al., 2022), other difficulties brought by the epidemic to daily life (Hughes, 2020), parents are biased towards online teaching, determined that it can lead to their reluctant and uninterested approach. Jones (2020) determined that parents with young children rarely attend ZOOM meetings and find it difficult to adapt to this teaching style. In the study, some of the teachers said that online teaching increased negative behaviors in children. Studies supporting this finding (Watts & Pattanaik, 2022) relates to the

negative changes observed in children during the epidemic period. The school administrator has a dilemma about the priority of granting permission to the grandmother who wants to accompany the child who has adjustment problems to school due to the epidemic rules (Muller & Baum, 2020). Some of the views in this research are the results of studies (Aral & Kadan, 2021) that support the findings of children's behaviors that create privacy problems when the camera is on, and that parents are indifferent to the problem of children's participation. Situations encountered during the epidemic provide teachers with guidance on how to apply ethical rules in extraordinary situations (Muller & Baum, 2020). The findings show that some of the preschool teachers are in ethical dilemma because they do not want to do the lessons and additional lessons online because they are tired. The sustainable well-being of preschool teachers is particularly important in the global pandemic (Eadie, et al., 2021). An ethical solution for teachers is that teachers in the risk group offer online teaching to children whose families prefer to stay at home, which can be a beneficial solution for both parties (Silverman, et al. 2020).

In this study, most of the preschool teachers stated that the children in their classrooms had difficulties in adapting to online teaching, but continuing this was an ethical dilemma. While trying to ensure that children are in safe, healthy and supportive learning environments (CECE, 2023) during the epidemic, teachers were stuck in ethical dilemmas between their professional values and responsibilities (NAECY, 2023). Similarly, studies (Çiçek et al. 2020; Jones, 2020; Zorec & Peček, 2022) determined that children hardly adapt to education, miss school, and often feel anxiety and fear. Nikolopoulou (2022), stated that limited resources/support at home and limited training in online methodology are disadvantages. With optimistic thinking, it can be expected that young children will be able to continue to develop flexibly and adaptively to new learning environments with clear and consistent directions (UNESCO, 2020).

In the research, some of the teachers' ethical dilemmas for children are that they stay away from the sick child who does not come to school clean. Few opinions are to be close to children who come to school clean and distance education is seen as a dilemma. Teachers experienced ethical dilemmas while trying to stay away from situations that would put the child at risk and create confusion, as per the professional boundaries and bilateral relations ethical code and standard. Here, they are caught between the child's feelings and responsibilities (Feeney & Freeman, 2018; NAECY, 2020). According to the findings, the behaviors of some of the teachers in solving ethical dilemmas are suggesting to children that the current situation is temporary, sending a sick child back to school, and take care of the child who comes to school sick. By applying the ethical principle of honesty, integrity and trust (Aydın, 2013), teachers treated children fairly and lovingly.

In the study, the majority of the teachers said that they could not communicate with the family and that they did not find it ethical for family members to interfere with the lesson activities on the Internet and they were in a dilemma. In similar studies (Aral & Kadan, 2021; Yazıcı et al., 2022), teachers defined that they have difficulties in communication, supporting children and families as a high level problem. Stoiljković (2020), on the other hand, emphasized highly positive attitudes when there is cooperation between the two parties. Teachers applied the NAECY and CECE principle of respecting and supporting families in their child-rearing duties (CECE, 2023; NAECY, 2023). In addition, as per the developmentally appropriate care and education standard, it has made an effort to adapt the child to the most appropriate learning environment (CECE, 2023). The findings indicated that some of the teachers did not find it ethical that parents showed distracting behaviors when they were on the screen or not, and that working families did not spare time for their children, and they were in dilemma. Feeney and Freeman (2018) stated that the most common ethical problems are those that concern families. By applying the ethical principle of respect (Aydın, 2013), teachers tried to communicate with the family in a way that supports the existence and integrity of the child and family. Acting with a sense of responsibility, teachers tried to convey lesson activities to children using

multiple digital environments (Akkaş-Baysal, Ocak & Ocak, 2020). In the study conducted before the epidemic (Zayimoğlu, Kaya & Durmaz, 2016), the majority of teachers had problems with parents. Muller and Baum (2020) determined that children, families and staff experience alot of stress and show their worries and fears in verbal/nonverbal ways. Different studies (Akın & Aslan, 2021; Jones, 2020; Lavidas, Apostolou & Papadakis, 2022) evaluated the positive effects of the family's participation in the child's teaching activities as beneficial results.

In this study, the majority of teachers stated that there was no unethical behavior of the administration in the epidemic and online teaching. In the findings, the majority of the opinions that there are ethical problems in management. Some opinions are that it is unethical for the administrator to take the sick child to school and to experience a lack of environment in the school. Some of the teachers expressed their suggestions that they can be more sensitive in mask, distance and cleaning measures. The application supporting the finding of the research that a teacher takes homework from village teachers has been applied extensively in Reggio Emilia in Italy (Reggio Emilia, 2020). Feeney and Freeman (2018) generally advised educators to consider ethical tact, that is, solving a problem in a way that is acceptable to all parties involved. Teachers tried to implement the ethical principle of effective use of resources (Aydın, 2013) by expressing the expectation of providing an adequate environment in the school. At the international level, “depending on the course of the epidemic, countries are recommended to go to school conversion to reduce the class size, move classes to temporary or open spaces, in line with the general COVID-19 health strategy to protect school children, teaching staff, other employees and families, as measures to be taken. It was also emphasized that sanitation, water and sanitation facilities will play a crucial role in the safe reopening of schools” (UNICEF, 2020). Similarly, in the study (Sezgin, 2020), it was determined that there are difficulties in applying the epidemic rules administratively and in providing appropriate teaching environment and opportunities. In the study before the epidemic, Zayimoğlu, Kaya and Durmaz (2016) determined that preschool teachers mostly did not have problems with the school management, but according to some, they had problems. Torn between desperate families and teachers, a disregarded governor, and cautious health professionals, the administrator faces an unprecedented ethical dilemma (Muller & Baum, 2020).

Finally, preschool teachers generally wished not to experience such a process again and stated that preschool education should be face-to-face. Most of the teachers thanked for this study. Some opinions are that the epidemic process is difficult, few are that online education is inefficient, there are difficulties in communication, technological infrastructure is not sufficient, and technological opportunities are equal. Teachers' assessments and feelings summarize the epidemic period and findings regarding online teaching. Similarly, the pandemic has brought new challenges to work-related well-being (Gülhan et al., 2021), the sustainable welfare of preschool teachers is particularly important in the global pandemic (Eadie et al., 2021), the epidemic It affects preschool children badly (Watts & Pattanaik, 2022), preschool education should be face-to-face, teachers experience negative psychological effects, communication problems in teaching (Nikolopoulou, 2022; Zorec & Pecek, 2022) support the research results. UNESCO (2020), the lack of equality in technological opportunities has caused ethical problems in terms of school management, teachers, children and families. However, it should also be kept in mind that remote teaching has emerged unexpectedly and as a necessity during the epidemic period, as he summarized the picture of the epidemic.

The limitations of this study are that it was conducted with 16 preschool teachers working in private and state preschool education institutions, and parents and administrators were not included in the study. Other aspects of the issue will be included in future studies.

4.1. Conclusion

The purpose of this research was to determine the way of conducting preschool education during the COVID-19 epidemic, the ethical problems experienced by children and families, and the solution proposals based on the opinions of teachers. The findings of this study support the relevant literature suggesting that epidemics will cause ethical problems with children in preschool teachers' classrooms, their families, and the teaching environment and have difficulty in producing solutions to these problems. The results of this study, the problems that preschool teachers have with families and children related to infrastructure and participation in online teaching during the COVID-19 epidemic, the efficiency of teaching, how the negative effects of the epidemic conditions change the behavior of children and families in face-to-face teaching, teachers reduce negativities, solve problems. It is important because it reveals the attempts to communicate with the family, their expectations from the management and solution proposals. While the teachers were experiencing the difficulties brought by the epidemic, they were tired of trying to carry out the education without interruption. It is recommended that teachers be rewarded with support and encouragement that will comfort them.

Ethics Committee Decision

This research was carried out with the permission of Burdur Mehmet Akif Ersoy University Social and Human Scientific Research and Publication Ethics Committee with the decision numbered GO2022/882 dated 05.10.2022 and numbered 2022/10.

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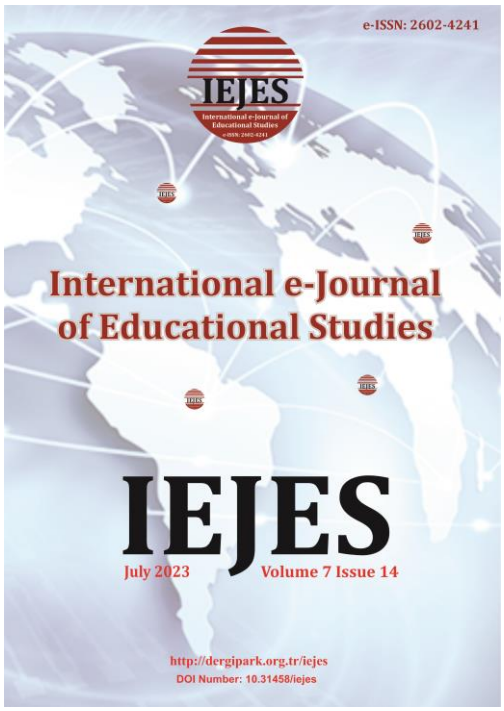

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Abstract

This study aims to examine the perspectives of the Faculty of Education Academicians towards distance education with the help of SWOT analysis. The study was designed with the case study method, one of the qualitative research methods. The research group consists of 30 academicians working in different fields at the Faculty of Education of a state University located in the north of Turkey. A Personal information form and a semi-structured interview form developed by the researchers were used as data collection tools in the study. Descriptive and content analysis techniques were used in data analysis. Within the scope of the validity and reliability studies of the research, direct excerpts and participant confirmation were performed. According to the results of the research, we report that academicians focus on digital literacy, access-preparation of online content suitable for learning goals/courses, communication-interaction, assessment-evaluation, and distance education system during the transition to distance education during the pandemic period. According to the findings, a distance education transformation model was proposed for education faculties and suggestions were presented in this direction.

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Research Article

An Education Faculty Example in the Evaluation of the Distance Education Process: SWOT Analysis*

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Abstract

This study aims to examine the perspectives of the Faculty of Education Academicians towards distance education with the help of SWOT analysis. The study was designed with the case study method, one of the qualitative research methods. The research group consists of 30 academicians working in different fields at the Faculty of Education of a state University located in the north of Turkey. A Personal information form and a semi-structured interview form developed by the researchers were used as data collection tools in the study. Descriptive and content analysis techniques were used in data analysis. Within the scope of the validity and reliability studies of the research, direct excerpts and participant confirmation were performed. According to the results of the research, we report that academicians focus on digital literacy, access-preparation of online content suitable for learning goals/courses, communication-interaction, assessment-evaluation, and distance education system during the transition to distance education during the pandemic period. According to the findings, a distance education transformation model was proposed for education faculties and suggestions were presented in this direction.

Keywords: Distance education, SWOT analysis, transformation in distance education.

1. INTRODUCTION

The last century has been a period in which the economic and social expectations of societies, and therefore the educational needs of individuals, differed. The developments in technology, virtual reality, and artificial intelligence have created factors that facilitate meeting basic needs such as education and facilitated the elimination of the factors that limit the opportunities to receive an education. For example; distance from the educational institution, the inadequacy of the space and capacity in the educational institutions, the desire to learn in line with the interests and abilities of the individual, the ability to continue life-long learning, etc. we may say that factors such as distance education and technological developments become easier (Kologlu, 2016). In addition, distance education has a structure that can meet higher education standards, and the perspective on distance education has completely changed after the Covid-19 pandemic. It has become an indispensable element for the continuity of education, not an alternative (Barış & Çankaya, 2016). In the Covid-19 process, trying to adapt the entire burden of educational environments to distance education conditions has created a transformation from formal education to distance education, especially in higher education. Avallone (2020) explains this transformation with 5 basic elements in her study (Figure 1).

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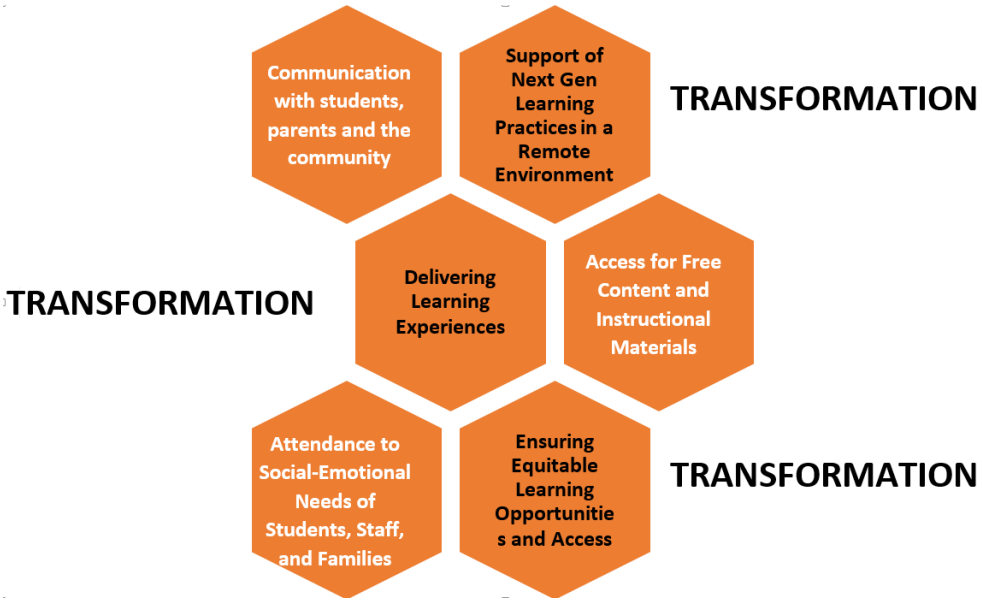

Figure 1. Transformation of education following covid-19 (Avallone, 2020), https://www.nextgenlearning.org/articles/supporting-our-learning-communities-in-a-time-of-crisis)

There are some fundamental implementing factors in the realization of such a transformation. According to Figure 1, firstly, a distance education plan should be created and all stakeholders involved should be guided and communicated with this plan in the process. Secondly, deeper learning opportunities need to be designed for online distance education, especially due to the involvement of social distancing. Third, equitable learning opportunities, access, and social equality (without language, religion, race, etc. discrimination) should be provided in the distance education environment. Then, to manage extraordinary situations such as the Covid-19 pandemic, etc., the social-emotional needs of all stakeholders (students, staff, and families) in the education process must be met to cope with the stress of such situations and to manage the resulting anxiety. Fifth, it is necessary to provide a learning experience that includes the distance education guide, resources, and online resource links to support the process and approaches to be used in teaching. Finally, free and unrestricted access to content and educational materials, and recommended network resources are required (Avallone, 2020). Many educational institutions have tried to create the dynamics mentioned above. However, in this process, it is obvious that there is a problem of harmony between the opportunities of educational institutions, educational goals, and expectations of students (Bilgiç & Tüzün, 2015). The low rate of adaptation to change, perhaps the lack of a B or C plan for such situations in many institutions, has hampered education to a large extent. In the world, adaptation to this process has become easier and productivity has increased in countries that have taken strategic planning measures (Regueras, Verdu, Munoz, Perez, De Castro, & Verdu, 2009; Tibingana-Ahimbisibwea, Willisb, Catheralla, Butleraand & Harrison, 2022). When faced with an unknown situation, strategic planning is a way to help an institution be more productive, and it is the most important guidance on how to use existing resources to achieve goals and objectives (Gürel & Tat, 2017). SWOT, on the other hand, is the most widely used among the known strategic planning methods (Vindača, Ļubkina, Abuže & Ušča, 2021; Yelken, Kılıç, & Özdemir, 2012).

1.1. SWOT Analysis

Today, the continuous change and development of institutions, systems, personnel, and beneficiaries of these systems have made the ability of individuals to adapt to changing conditions the most important individual competence. The profiles of not only companies, and institutions, but also education systems, schools, teachers, and even students are constantly changing, and we wake up to

the new day with different values and competencies. This situation necessitates an evaluation and the conversion of positive or negative results into opportunities. Knowing our strengths and weaknesses, both as individuals and as institutions, we should be able to analyze emerging opportunities and emerging or potential threats, and reveal the situation we are in. There are different bases on which we can seek help in such a case analysis. One of them is referred to as SWOT analysis in the literature. SWOT is a term formed by the combination of four different terms as a word. These are stated as strengths, weaknesses, opportunities, and threats (Namugenyi, Nimmagadda & Reiners, 2019). SWOT was first introduced by Humphrey in the 1960s as SOFT (Satisfactory, Opportunities, Fault, and Threat). Over time, SWOT gets its final form with the contributions of many researchers (Bozok, 2019:28). In this analysis, factors consist of internal and external environments and various subsystems connected to them. It is a necessity to analyze these factors in education systems as in institutions. Conducting such analyzes will certainly contribute greatly to increasing the quality of education. In this regard, the use of SWOT analysis in the preparation of upper policy documents and in determining development areas is also mentioned in the MoNE 2015-2019 Strategic Plan Preparation Program (MoNE, 2013:11). While the process of examining this organization and its environment is called SWOT analysis (Gürel & Tat, 2017), the result of this analysis reveals a thinking model for managers (Ülgen & Mirze, 2014). It is a standard brainstorming and communication technique used to identify problems associated with changes (Zhu & Mugenyi, 2015). In this analysis method, strong and weak factors constitute internal factors, while opportunities and threats constitute external factors (Leiber, Stensaker, & Harvey, 2018).

Figure 2. Schematic Presentation of SWOT Analysis (Leiber, Stensaker & Harvey, 2018**).**

The main purpose of the SWOT analysis is to make a systematic evaluation of the subject under investigation. In educational processes, we may state that the internal and external factors of the institution or program are revealed (Gökmenoğlu & Eret, 2011). For example, a SWOT analysis of distance education, which is the subject of the research, can provide us with ideas about the existence of strong and weak points, the opportunities, and the threats that distance education can bring in this process. It will help us in solving the problems experienced especially in the context of systemic, procedural, and student-academicians.

SWOT analysis studies carried out to increase the quality of the education process in higher education (faculties of nursing, tourism, accounting, computer and programming, computer and instructional technologies, business administration, and open education) are mostly included in studies

that evaluate this process from the eyes of students, apart from the studies reflecting the views of the faculties providing distance education and the common compulsory courses taught in these faculties (Aksoy, Aksu, Sözbir & Erenel, 2022; Barış & Çankaya, 2016; Bayrak & Önal, 2021; Erfidan, 2019; Koloğlu, 2016; Makhakhane, Wilkinson & Ndeya-Ndereya, 2016; Özköse, Arı & Çakır, 2013; Yanpar Yelken, Kılıç & Özdemir, 2012). However, with the Covid-19 pandemic, no study has been found that includes the views of academicians working in education faculties that provide both practical and theoretical courses with distance education. Since the views of the academicians, who are the instructors of the courses, have a significant impact on the values and standards of the pre-service teachers and the field (Swazey, Anderson, & Louis, 1993), it is considered that the relevant study will shed light on the systemic, procedural and stakeholder problems within the education faculties and offers suggestions for the solution of these problems. In this regard, our research question and sub-problems that we seek to answer within the scope of the study are;

Research Question: How do the academicians working in the Faculty of Education perceive the application of distance education in teacher education?

1. What are the perceived strengths of the academicians working in the Faculty of Education regarding the application of distance education in teacher education?

2. What are the perceived weaknesses of the academicians working in the Faculty of Education regarding the implementation of distance education in teacher education?

3. What are the opportunities perceived by the academicians working in the Faculty of Education regarding the application of distance education in teacher education?

4. What are the threats perceived by the academicians working in the Faculty of Education regarding the implementation of distance education in teacher education?

2. METHOD

2.1. Research Method

In this study, which was conducted to evaluate the distance education process of the faculty of education faculty members with SWOT analysis, the case study design, which is one of the qualitative research methods, was used. A case study is a research design in which data obtained through different data collection techniques such as interviews and observations about a situation or event in our current life are systematically examined, interpreted, and described (Creswell, 2013).

2.2. Study Group

The study group in the research consists of 30 academicians working in the education faculty of a state university located in the north of Turkey. The maximum diversity case sampling method, one of the purposeful sampling methods, was used to include the academicians from all departments. The title and department information of the academicians are presented in Figure 3 and Figure 4.

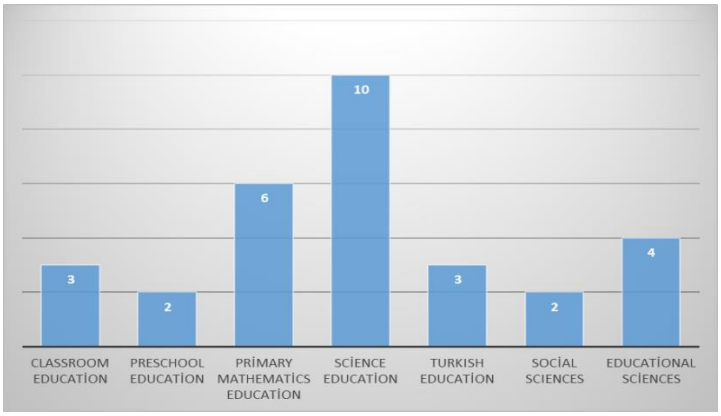

Figure 3. Distribution of academicians according to their departments

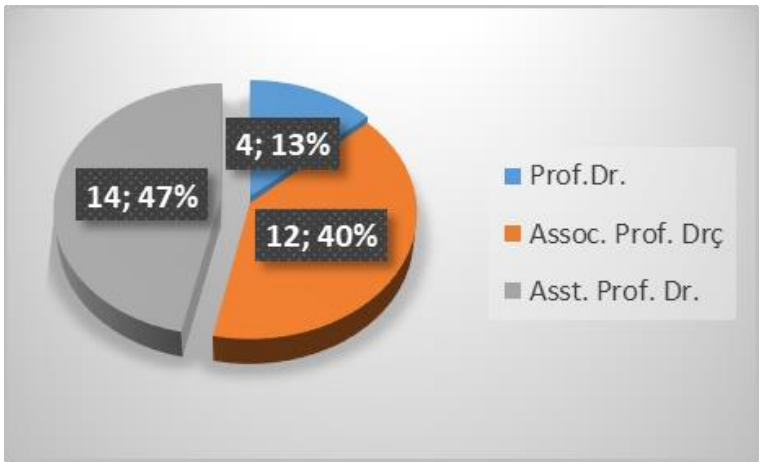

Figure 4. Distribution of academicians according to academic titles

As seen in Figure 3 and Figure 4, we see that most of the academicians working in the field of science education participated in the study, along with the majority of Assoc. Prof. Dr. and Asst. Prof. Dr. faculty members.

2.3. Data Collection Tool and Data Collection Process

In the research, a semi-structured interview form consisting of 4 questions developed by the researchers was used as the data collection tool. Within the scope of the validity and reliability studies of the data collection tool used, the opinions of experts in the field of educational sciences and technology education were consulted. Due to the Covid 19 pandemic, interview questions were prepared online via Google Forms. Afterward, the necessary information was given to the research group and the relevant link was sent. They were asked to sincerely answer four different questions posed to them to clearly demonstrate their experiences in distance education processes. The data of the study were collected between 03.09.2021 and 03.26.2021.

2.4 Analysis of Data

The data obtained from the research were first arranged and made ready for the analysis process. The data are presented by making descriptive content analysis, one of the qualitative data analysis methods. One of the primary purposes of content analysis is to establish relationships between the obtained data through concepts. The basic process in this analysis is to gather similar data within the framework of certain concepts and themes and to interpret them by arranging them in a way that the reader can understand (Yıldırım & Şimşek, 2016). The participants were coded as A1, A2, A3, ... A29, A30. To ensure the reproducibility and confirmability of the data obtained, it is necessary to explain how the data was obtained and analyzed. In the data analysis, two independent researchers create codes and themes from the data obtained after determining the common theoretical structure. Using the reliability formula of Miles and Huberman (1994), the agreement among the coders was calculated as 84%.

2.5 Validity and Reliability

2.5.1. Include direct excerpts

The codes and themes are presented in tables. In addition, the opinions taken from the academicians within the scope of the validity and reliability studies on the data obtained in the study are given with direct excerpts.

2.5.2. Participant confirmation

One of the ways to ensure the internal validity of studies is through participant confirmation. Participant confirmation; the participants are asked for feedback on the findings after the researchers

shape the study findings (Yıldırım & Şimşek, 2016). In this direction, the participant confirmation method was used in the answers given to the questions asking the academicians to reflect on their views on distance education with the help of SWOT analysis.

2.5.3. Expert review

One method that increases the internal validity and credibility of the studies is the expert review method. The expert review includes a critical and objective examination of the entire study, including the theoretical framework, method, data analysis, and conclusion part of the process. In this direction, the expert opinions of two academicians who are experts in educational sciences and technology education were consulted. The opinions of the two experts were compared and brought together.

3. FINDINGS

In this part of the study, the results of the analysis carried out for the data obtained in the study are presented. First of all, academicians were asked whether they had experience in distance education in their previous lives. The results obtained are presented in Figure 5.

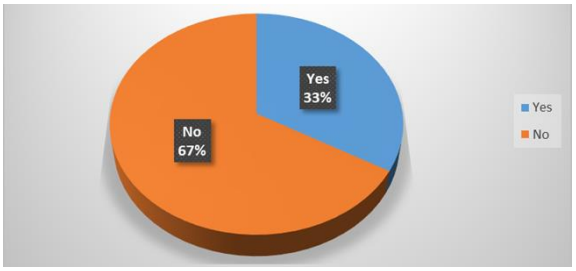

Figure 5. The answer given by the academicians to the question "Have you had any experience of distance education before the pandemic period?".

33% (n=10) of the academicians state that they have experienced the distance education process before. However, 67% (n=20) of the academicians state that they have not experienced the distance education process before.

Table 1. Descriptive analysis results of codes belonging to the theme of "strengths"

Codes	Academicians	f	%
Freedom of Time and Space	A1,A6,A7,A8,A10,A13,A15,A16,A17,A18,A20,A21,A23,A26, A27, A29, A30	17	28,3
Digital Literacy	A4, A18, A20, A27, A28, A30	6	20
Economic	A2, A6, A7, A14, A15, A16, A22, A24, A28	9	15
Resource Richness	A5, A6, A12, A15, A16, A22, A24	7	11.6
Recording of courses	A3, A11, A14, A15, A24, A28	6	10
Pedagogical Contribution	A19, A22, A24, A28, A30	5	8.2
Individual Learning	A12, A13, A19	3	5
Assessment and evaluation	A3, A9	2	3.3
Safe Environment	A14, A15	2	3.3
Opportunity Equality	A16, A27	2	3.3
Information and Data Sharing	A17	1	1.6

The analysis results of the academicians on the strengths of distance education are presented in Table 1. In this direction, we observed that especially academicians emphasize the code of freedom of time and space on the strengths of distance education.

Excerpts from academicians on the subject are as follows.

A10:"…… *Providing education opportunities for students working in different cities, especially in postgraduate courses* …."

A16: "…*It is one of the most important advantages of being able to teach the lesson in every place, that is, being away from the necessity of an environment such as a classroom*..……"

Academicians also state that one of the strengths of the distance education process is digital literacy skills. Some excerpts from the views of academicians are given below.

A18"…….. *In addition, to gain experience in using instructional technologies* ……"

A27" …….. *I think it is very suitable for the effective use of instructional technologies. It is necessary for the concretization of concepts at primary and secondary education levels* ……"

Academicians state that one of the strengths of the distance education process is being economic. Some excerpts from the views of academics are given below.

A14" …… *creating an opportunity for the children of families with financial difficulties to follow their undergraduate education at less cost than home* ……"

Academicians point out the richness of resources as course content and materials as one of the strengths of the distance education process. Some excerpts from the views of academics are given below.

A12"….. *The process enabled more use of visual content*. ……"

A16"…….*In addition, we can easily deliver many educational materials to students through distance education*.……."

Academicians state that one of the strengths of the distance education process is the recording of the courses. Some excerpts from the views of academicians are given below.

A24"……..*Providing students with the opportunity to watch the courses they could not attend again* ……"

A15"……. *Ensuring the student's freedom in accessing the lessons* ……."

Academicians state that they have pedagogical contributions as one of the strengths of the distance education process. Some excerpts from the views of academicians are given below.

A19"…… *It is beneficial for permanent learning that the students mostly solve the difficulties they encounter with their lessons on their own*. ……"

A30"… *Flexibility, openness to research and discovery* ……."

Academicians state that the distance education process is suitable for individual learning as one of its strengths. Some excerpts from the views of academicians are given below.

Table 2. Descriptive content analysis results of codes belonging to the theme of weaknesses

Codes	Academicians	f	%
Interaction	A1,A2,A3,A4,A5,A6,A9,A10,A11,A14.A15,A16,A18,A19, A20, A21, A22,A23,A24,A25,A26A27,A28,A29	24	24,4
Individual Infrastructure	A6, A7, A11, A12, A15, A16,A17,A18,A20,A22,A24	11	9.8
Infrastructure	A3, A4, A14, A15,A16, A17,A22,A24,A26,A29	10	9
Motivation	A4, A6, A7, A12, A14, A16, A19,A27	8	7.1
Applied Courses	A11, A16, A17, A18, A19, A20, A22, A24	8	7.1
Assessment & Evaluation	A8, A11, A12,A14,A17,A22,A29	7	6.2
Classroom Management	A1,A7,A11,A16,A19,A28,A30	7	6.2
Inequality of Opportunity	A13, A14,A15,A22,A24,A29	6	5.3
Up skilling	A11, A15, A16, A17, A19, A24	6	5.3
Time	A2, A4,A15,A23,A30	5	4.4
Peer Learning	A11,A14,A19,A22	4	3.5
Pedagogical Contribution	A18,A20,A22,A30	4	3.5
Attendance to Lesson	A4, A8, A9, A11	4	3.5
Controllability	A22,A29,A30	3	2.6
Feedback	A3, A15, A21	3	2.6
Extrinsic Motivation	A3, A21	2	1.7

The analysis results of the academicians on the weaknesses of distance education are presented in Table 2. In this direction, we observed that principally academicians frequently dwell on the "interaction" code of the weaknesses of distance education.

A6 "… *Low interaction, minimal social sharing, the human being is a social being and interaction is very important in learning and motivation*……"

A12" …… *The indifference of the students who are not accustomed to distance education towards opening the camera and microphone, and the student's inability to answer the questions caused deficiencies in active participation in the lesson*. ……"

Academicians state that one of the weaknesses of the distance education process is the individual infrastructure that students have. Some excerpts from academician opinions are given below.

A24 "…*Problems of access to technology created by inequality of opportunity* ……."

Academicians state that one of the weaknesses of the distance education process is the infrastructure. Some excerpts from the views of academics are given below.

A17 "……. *Technical problems and infrastructure problems may occur*. ……."

A26"…… *The lack of technical and technological infrastructure of the stakeholders (student, teacher, etc.) involved in distance education*. ……."

Academicians state that one of the weaknesses of the distance education process is the problems encountered in applied courses. Some excerpts from the views of academicians are given below.

A18 "…..*It is difficult to carry out many activities that can be done in the classroom (group discussion, cooperative learning, etc.) in the distance education process*. …."

A20 "…..*It is more difficult to interact with students and to carry out many activities that can be done in the classroom (group discussion, cooperative learning, etc.) in the distance education process*. ….."

Academicians state that one of the weaknesses of the distance education process is the inequality of opportunity. Some excerpts from the views of academicians are given below.

A15 "…*ineffective in regions with low socioeconomic levels of families*. ……"

A23"… *Difficulties and limitations related to the inability of every student to access distance education equally, problems caused by the lack of or limited physical facilities of students, and institutions such as infrastructure*……."

A29"…… *not every student has access due to technological and economic reasons* ……."

Academicians state that one of the weaknesses of the distance education process is the problems experienced in assessment and evaluation. Some excerpts from the views of academicians are given below.

A11 "……*Lack of opportunity to observe students, lack of healthy assessment and evaluation* ……"

Academicians state that one of the weaknesses of the distance education process is the point of attendance of the lesson. Some excerpts from the views of academicians are given below.

A4 "…..*In addition, there may be other applications that can distract the student from the computer or phone.* ……"

Table 3. Descriptive content analysis results of the codes of the Opportunities theme.

Codes	Academicians	f	%
Freedom of Time and Space	A3,A6,A7,A8,A11,A15,A16,A22,A23,A24,A27,A29,A30	13	20.6
Increasing Digital Literacy	A4,A11,A12,A14,A15, A17,A24,A25,A28	9	14.2
Individual Learning Opportunity	A6,A12,A13,A15,A16,A22,A27,A28,A29	9	14.2
Ease of Access to Information	A6, A8, A18,A20,A21,A22,A27,A29	8	12.7
Economy	A15,A19,A24,A26,A30	5	7.8
Effective use of technology	A12,A14,A18,A20	4	6.4
Reaching a large audience (mass)	A10,A22,A24	3	4.8
Equality in Opportunity	A16,A27,A29	3	4.8
Awareness of Course Content in Distance Education	A2,A14	2	3.2
Pedagogical Development	A15,28	2	3.2

Assessment and Evaluation	A18,A24	2	3.2
Data and Source Diversity	A1	1	1.6
Safe Environment	A3	1	1.6
Sustainability in Education	A2	1	1.6

The results of the analysis of the views of the academicians on the opportunities provided by distance education are presented in Table 3. In this direction, we found that academicians frequently focus on the freedom of time and space code at the point of opportunity provided by distance education.

A3 "….. *Participating easily in training held in other cities or even countries. Absence of risks such as epidemic disease transmission …….*"
A11"… *Creating time and resources for graduate students who cannot attend graduate-level courses due to reasons such as transportation etc*. …
A12"…. *The increase in demand for courses, especially in postgraduate education, is a result of the time and space independence of the process*. ……"

Academicians state that there is an increase in digital literacy in terms of the opportunities of the process of distance education. Some excerpts from the views of academicians are given below.

A14"… *There has been a rapid transition to technology. It was a forced integration. It can also be an educational alternative in the post-pandemic period with quality content for some theoretical lessons. It has created an awareness and working space about educational digital content……*"
A17 "…*As a necessity of the digital world, it prepares students for the digital world. Develops digital literacy skills. It provides opportunities for the use of these technological tools for teaching purpose in a meaningful way*…"

Academicians state that the process of distance education provides an opportunity for individual learning in terms of opportunities. Some excerpts from the views of academicians are given below.

A6"… *eliminate incomprehensible notes with a chance to watch again* …"
A29"…*The development of technology, the chance to take lessons from lecturers in different universities or to teach different departments and universities*…"

Academicians express the view of the economy in terms of the opportunities of the distance education process. Some excerpts from the views of academicians are given below.

A19"… *Reducing the cost of education* …"
A24"… *It facilitates the control and evaluation of processes such as homework and exams. Education saves stakeholders time and the economy. It strengthens technology literacy*. …"

Academicians refer to the process of distance education as reaching a wide audience in terms of opportunities. Some excerpts from the views of academicians are given below.
A22"… *Access to topics/courses and experts in a short time within the scope of technical possibilities, increasing rates in the dissemination of information, enabling students to have the right to make choices by experiencing different experiences and accessing different and wide sources, choosing, making judgments, making decisions and making decisions with the acquired knowledge and skills. Contributing to the development of initiative use skills*…"

Table 4. Descriptive analysis results of codes belonging to the "Threats" theme.

Codes	Academicians	f	%
Communication Problems	A8,A9,A10,A11,A15,A16,A18,A19,A20,A21,A22,A23,A24, A25,A26,A27	16	20.2
Decreasing socialization	A8, A9, A10,A11,A15,A18,A19,A20,A21,A22,A23,A24,A25,A27	14	17.8
Improper Execution of Assessment and Evaluation	A3, A4, A5, A7,A8,A9,A12,A21,A30	9	11.4
Failure to fully understand the nature of the lessons	A8,A15,A18,A20,A21,A22,A24,A29	8	10.1
Health Problems	A6,A8,A11,A17,A19,A29	6	7.5
Failure to provide information security	A12, A16,A17,A23,A24,A25	6	7.6
Elimination of physical interaction	A2,A4,A6,A15	4	5
Lack of Motivation	A1,A12,A30	3	3.8
Peer Learning	A9,A15,A22	3	3.8
Mental/Mechanical Production Barrier	(A17, A23, A29)	3	3.8
Failure to Fulfill Learning-Teaching Activities	A7,A15,A21	3	3.8
Inequality of Opportunity	A13,A21	2	2.5
Digital Fatigue	A29	1	1.2
Class attendance	A12	1	1.2

The results of the analysis of the views of the academicians on the threats are presented in Table 4. In this direction, we found that academicians frequently dwell on the communication problems code at the point of threats to be created by distance education.

A20"… *It strengthens the communication between the student and the academician. Most of the time, a semester ends before students even see their faces because they are not connected to the lesson with their cameras. In teacher education, the academician should be a model for teacher candidates in conveying the complex nature of a real classroom environment, such as the language he/she uses, body language, different methods and techniques he/she uses in the lesson, the activities he/she does, and the classroom management approach*…"

Academicians state that one of the threats to distance education is its compatibility with the nature of the course. Some excerpts from the views of academicians are given below.

A8 "…..*Especially in science education, it is a big problem that applications and experimental studies cannot be done adequately*. ……."

Academicians state that one of the threats to distance education is peer learning. Some excerpts from the views of academics are given below.

A9"…*It prevents students from becoming individualized and socializing, thus making peer communication and learning more difficult*…."

Academicians state that one of the threats related to distance education is the failure to carry out the assessment and evaluation of the lessons properly. Some excerpts from the views of academics are given below.

A4"… *Especially in the assessment and evaluation phase, there may be problems in the implementation of the exams*….."

4. DISCUSSION and CONCLUSION

According to Anderson and Dron (2011), all technical and social developments are shaped by the thoughts and perspectives of those who develop, experience, and implement them. For this reason, the perspectives of academicians working in the faculty of education on distance education will shape both the process and the pre-service teachers. We may say that distance education is preferred mostly for 5 Common Courses in universities in Turkey (Kaçan & Gelen, 2020). Considering that more than half of the academicians, who started to teach all of their courses in education faculties via distance

education, during the pandemic period, this study provides substantial data about giving the courses given in education faculties face-to-face or remotely, or the points to be considered in the establishment of such a system. We can say that academicians, who are indispensable stakeholders of this structure, evaluate this process, in which they experience distance education due to the Covid-19 pandemic, both in terms of pre-service teachers, their professional development, and system/process. According to this, we can say that the common result obtained in the study is that the academicians see distance education as a process in which they gain competence in the digital context in terms of their professional development, provide freedom of time and space as a system, provide an economic environment, but decrease their communication and social interactions with pre-service teachers. So the factors that academicians see as strengths, weaknesses, opportunities, and threats are explained in sub-titles.

4.1. Strengths and Weaknesses

In this process, academicians stated that distance education provides freedom of time and space for pre-service teachers. In the literature academicians who work in different departments have similar views (Erfidan, 2019; Özköse, Arı & Çakır, 2013; Ustabulut, 2021; Yanpar Yelken, Kılıç, & Özdemir, 2012). In addition, they state that it provides a wealth of resources and that the fact that the courses can be watched by pre-service teachers, again and again, affects them positively in terms of theory and pedagogy. In addition, they think that lessons can be taught more economically in this way. In terms of their professional development, this process increases their digital literacy skills. However, academicians have difficulties interacting with teacher candidates in the process, and this situation also affects peer learning. Also, they experience infrastructure and hardware problems both systemically and individually, which causes inequality of opportunity. Barış and Çankaya (2016) also stated in their studies technological failures and hardware problems are the weak points of the distance education process. Academicians also state that such situations reduce the motivation of both themselves and their students, that distance education is not suitable for courses that include practice and skill acquisition purposes, and that they experience similar problems in assessment and evaluation and classroom management. There is an emphasis on the need to prepare different instructional experiences (content, method, technique, readiness, measurement, and evaluation) for different course contents in general from the statements of the academicians (Erfidan, 2019; Vindača, et al., 2021; Yanpar Yelken, et al., 2012). Although distance education provides opportunities for academicians in the context of digital literacy (Ustabulut, 2021), it is seen that they have difficulties in creating content for online education in the context of the course's achievements. In the study of Yeşiltaş, Çelikoğlu, Dağdalan, Aydın and Çetinkaya (2023), it is stated that academicians working in education faculties have difficulties in preparing digital materials. This situation supports that academicians need support in subjects such as content creation, digital material preparation, and program use, which can provide cooperation and group work in their classes, create a classroom atmosphere, and belonging, and increase their motivation.

4.2. Opportunities and Threats

Although the distance education process has been passed without experiencing the adaptation process in education faculties as in all educational institutions, it can be said that this process is seen as an opportunity by academicians in terms of providing freedom of time and space, providing an opportunity for the development of digital literacy, and providing ease of access to information. In addition, pre-service teachers have the opportunity to learn at their own individual pace. Although distance education is one of the effective approaches in preparing an education and training environment for individual needs (Çakır, Calp, & Doğan, 2015), it is seen that the academicians working in the education faculty draw attention to important factors that may threaten such a learning opportunity. The problems experienced in two-way communication in the process and the decrease in socialization among pre-service teachers are seen as the most substantial problems to be overcome. In

addition, we can state that the most important issue is that measurement and evaluation cannot be carried out in a healthy way. The fact that the nature of the courses in the education faculties could not be fulfilled is determined as another important factor. In the studies conducted by Barış and Çankaya (2016) and Koloğlu (2016), only a small number of academicians think that applied courses can be given via distance education.

4.3. Distance Education Transformation Strategy for Education Faculties

We may say that academicians concentrate on digital literacy, access-preparation of online content suitable for learning goals/courses, communication-interaction, assessment-evaluation, and distance education system during the transition to distance education during the pandemic period. One of the most important dimensions of this study is that it proposes a model for the distance education transformation process in education faculties. Vindača, et al (2021) state that the transformation in education during the covid-19 pandemic should be carried out in six basic stages. In this study, some key and sub-stages were added to the relevant strategy based on the opinions of the academicians (Figure 6).

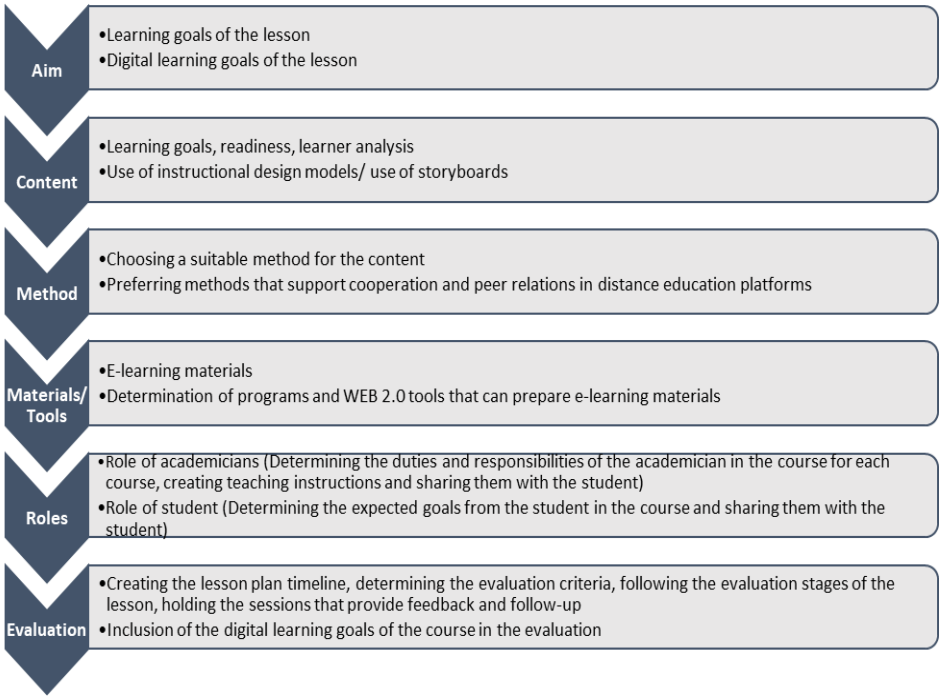

Figure 6. Distance education transformation strategy for education faculties

In order to design an effective course in distance education, it is necessary to prepare the process systematically and by following the instructional design processes (Hsu, Hamilton, & Wang, 2015).

According to the model we propose, we foresee that academicians should transform the purpose, content, method, materials/tools, roles, and evaluation stages in creating and conducting a course with a distance education approach. According to this approach, besides the learning goals of the lesson, the digital learning goals that will be required for participation in the lesson or the conduct of the lesson or planned to be gained by the student must be determined and the content must be prepared accordingly (Peters, 2000). The content, which is another important stage, should be designed as content that is suitable for the level of the student, allows interaction, activates the student, and allows working individually or in groups (Hsu, et al., 2015). We think that the important thing here is that the instructional planner prefers one of the instructional design models by performing the learner analysis on the aims and objectives of the course and designing it in this direction. Chang and Chen (2015) reported that instructional design models are effective in distance education in creating a

learning and student-centered, inquiry learning environment. Uçar and Kumtepe (2016), on the other hand, stated that students' interest, confidence, effort, and success in the course increased by using the ARCS-V motivation model to solve problems such as motivation and class participation in distance education. In a systematic review study by Spatioti, Kazanidis, and Pange (2022), they stated that the ADDIE model provides a strong teaching and learning environment in distance education in terms of the multimedia presentation, feedback, interactive exercises or variety of activities, learning strategy (individualized and collaborative) and the role of educators. Another factor that academicians need support in the process is the selection and implementation of strategies, methods, or techniques that support students' cooperation and peer learning. Zorlu (2020) recommends the Jigsaw method for the application of cooperative learning in distance education in his study, Lee and Recker (2021) recommend online discussion sessions with participation motivation, while Peters (2000) suggests methods and techniques such as simulations, role-playing, brainstorming, and project groups. These examples can be reproduced for the purpose, content, and needs of the course. We report that another important factor in the distance education process is the creation of materials. It is known that resources such as presentations, screenshots, asynchronous video broadcasts, etc. are used as course materials in distance education (Şenkal & Dinçer, 2012). However, pre-service teachers stated that they needed materials that would make them active, enable practice, and help meaningful learning, rather than materials on listening/watching (Karakuş, Cheapsatar, Karacaoğlu, Esendemir, & Bayraktar, 2020). The opinions of the academicians regarding the participation of pre-service teachers in the course are also in this direction. For this reason, it is important to create environments that will enable the effective use of programs and web 2.0 tools that can be used in e-learning material design. One of the most important points mentioned in many studies on distance education is the determination of the roles of academicians and pre-service teachers within and even outside the system (Hsu, et al., 2015; Spatioti, Kazanidis, & Pange, 2022). Knowing the duties and responsibilities of the academician and teacher candidate or creating teaching instructions and sharing this information plays a key role in the effective execution of distance education. For example, determining which task or content will be done when by whom, and in what way plays an important role in the mutual execution of the process. The evaluation process is seen as one of the weakest aspects and threat factors in distance education (Kologlu, 2016; Özköse, et al., 2013). We may say that the most important factors in the validity and reliability of the evaluation are the follow-up of the process, the determination of the evaluation criteria, and the feedback. According to the results of this study, it is important to include the digital objectives of the course in the evaluation. We think that whether the digital skills that need to be acquired in order to reach a predetermined goal in a course taught with a distance education approach are acquired or not will also affect the distance education process. Bozkurt (2020) has determined that the digital competence and skills needed in the Covid-19 process are not fully available. In this context, holding sessions that provide feedback and follow-up, and the creation of a lesson plan timeline is necessary for a healthy evaluation process.

4.4. Suggestions

According to the results of this study, it is seen that the ongoing problems in the distance education transformation process continue. In order for academicians to carry out this process effectively, it is seen that they need to get support from the institutions they work in as well as their individual needs for self-development. In order to reflect the atmosphere of face-to-face education in the classroom in education faculties to distance education, it is necessary to transform the processes of digital literacy, accessing-preparing online content suitable for learning goals/courses, communication-interaction, measurement, and evaluation. The model is a general recommendation and each department can follow the model stages according to their own needs and make the distance education process a better quality and effective process. In addition, researchers who want to work in

this field can be recommended to present a holistic picture of distance education with the models they will create by taking the opinions of pre-service teachers.

Ethics Committee Decision

This research was carried out with the permission of Ordu University Social and Human Scientific Research and Publication Ethics Committee with the decision numbered 02/2021-37 dated 25.02.2021.

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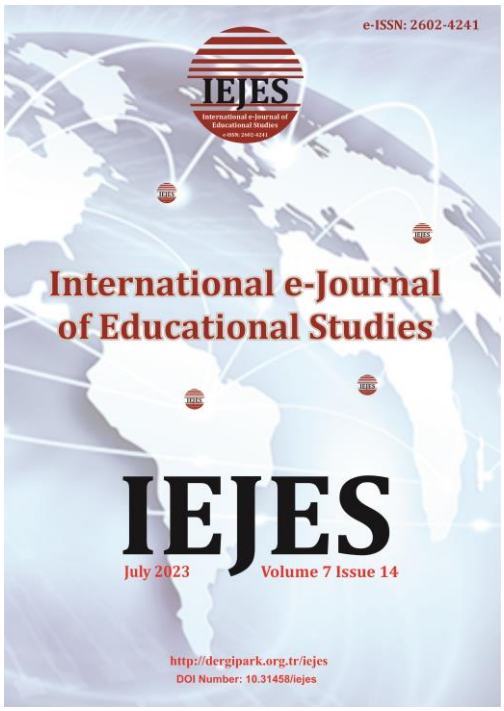

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Abstract

One of the primary objectives of today's teaching is to prioritize students' thinking skills as a path to become lifelong learners. Those skills are improved by enabling students to learn actively. Role of teacher in the active learning environment is to facilitate students' learning, and questions asked by students are important in the process. Based on the relevant considerations, this study aimed to identify questioning attitudes of secondary school students in mathematics courses and investigate their questioning behaviors in line with teacher and student views. The study utilized the partially mixed sequential equal status design. The study group was composed of 15 teachers working at five secondary schools in a city center of a rural province and 690 students. The data were collected through the Attitude Scale Toward Asking Questions, written view forms, semi-structured interviews, and observations. Exploratory statistical techniques were used to analyze quantitative data, and qualitative data were subjected to a content analysis. According to the results from anxiety about questioning subscale of Attitude Scale Toward Asking Questions, the students were anxious above moderate levels although they had high levels of questioning attitudes. Furthermore, it was concluded that number of questions asked by the students increased with higher grade levels, but they asked questions less frequently. In addition, it was determined that about half of the students refrained from asking questions, due to frustration and fear.

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Research Article

Secondary School Students' Attitudes and Teacher-Student Views on Questioning in Mathematics Course *

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Abstract

One of the primary objectives of today's teaching is to prioritize students' thinking skills as a path to become lifelong learners. Those skills are improved by enabling students to learn actively. Role of teacher in the active learning environment is to facilitate students' learning, and questions asked by students are important in the process. Based on the relevant considerations, this study aimed to identify questioning attitudes of secondary school students in mathematics courses and investigate their questioning behaviors in line with teacher and student views. The study utilized the partially mixed sequential equal status design. The study group was composed of 15 teachers working at five secondary schools in a city center of a rural province and 690 students. The data were collected through the Attitude Scale Toward Asking Questions, written view forms, semi-structured interviews, and observations. Exploratory statistical techniques were used to analyze quantitative data, and qualitative data were subjected to a content analysis. According to the results from anxiety about questioning subscale of Attitude Scale Toward Asking Questions, the students were anxious above moderate levels although they had high levels of questioning attitudes. Furthermore, it was concluded that number of questions asked by the students increased with higher grade levels, but they asked questions less frequently. In addition, it was determined that about half of the students refrained from asking questions, due to frustration and fear.

Keywords: Student questions, mathematics course, questioning attitude, teacher

1. INTRODUCTION

The shift from a teacher-oriented education to a student-oriented one has brought about a new perspective to questioning approaches in the classroom. Today, researchers emphasize the importance of student questions both in teaching and learning processes (Almeida, 2012; Chin & Brown 2002; Etkina & Harper 2002; Madhu, 2015). When hearing or reading student questions, teachers can identify common misconceptions, answer some of the individual questions and adjust their next teaching with knowledge of students' learning (Chin & Osborne 2008; Etkina & Harper 2002; Harper, Etkina, & Lin, 2003; Kubat, 2018; Watts, Alsop, Gould & Walsh, 1997). Student questions can provide elucidative information about their reasoning, what they do or do not know and what they want to know (Black, Harrison, Lee, Marshall, & Wiliam, 2002; Chin & Osborne, 2008). For students, generating their questions is the first step to fill in the information gaps. Questioning allows students to understand a new subject and associate it with other opinions even when expressing their existing knowledge. Moreover, other than being a cognitive and metacognitive tool, questions are an indispensable part of self-questioning and self-evaluation (Chin & Osborne, 2008). In particular, student questions are critical in problem solving on the metacognitive level. Furthermore, different and creative answers depend on asking good questions to reveal them (Almeida, 2012; Shodell, 1995).

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One of the primary objectives of today's teaching is to prioritize students' thinking skills as a path to become lifelong learners in the learning and teaching process. Those skills are improved by enabling students to learn actively. Teacher's role is to facilitate student learning in an active learning environment where questions are the main element (Almeida & Neri de Souza, 2010). Institutions of education are among the environments where individuals will learn the questioning attitudes and behaviors effectively and acquire and improve questioning skills (Yeşil, 2008). However, studies have shown that the majority of questions in the classroom setting are not asked by students but teachers (Almeida, 2012; Dillon, 2004; Harper, Etkina & Lin, 2003; Madhu, 2015; Singh, Shaikh, & Haydock, 2019). Questions asked by students are not well-structured in general (Dillon, 1988; Good, Slavings, Harel & Emerson, 1987; Graesser & Person, 1994). These questions seem to be shallow and tend to have short answers; in other words, few of the student questions are advanced questions that involve inferences, multi-tiered reasoning, and implementation of a new idea into a new area of knowledge, synthesis of a new idea from several information sources or critical evaluation of a request (Graesser & Person, 1994). Surprisingly, teachers are not aware of the said situation (Dillon, 1981; Susskind, 1979). However, asking questions means thinking; therefore, thinking manifests itself as questions (Santoso, Yuanita & Erman, 2018). When students try to combine their preliminary knowledge and new information in their attempt to understand a given situation, questions also help them guide their learning (Almeida, 2012; Chin, 2001; Dillon, 1988, 2004). Other than being a learning method, questioning is also an important skill for the development of scientific thinking for students (Chin, 2001). The following answer provided by the Nobel laureate physicist Isidor Isaac Rabi to the question of how he became a scientist is a good example for this: "*My mother made me a scientist without ever intending it. Every other Jewish mother in Brooklyn would ask her child after school: 'So? Did you learn anything today?' But not my mother. 'Izzy' she would say, 'did you ask a good question today?' That difference - asking good questions - made me a scientist.*" (Sheff, 1988, p. 26). This explanation by Isidor. I. Rabi suggests that thinking skills cannot be developed without developing question-asking skills first (Şenşekerci & Bilgin, 2008).

Although educators attach importance to the role of student questions in learning (Almeida, 2012; Almeida & Neri de Souza, 2010; Dillon, 1981; Leikin, Koichu, Berman & Dinur, 2017), it is observed in the literature that teacher questions are in the focus rather than student questions (Chin & Osborne, 2008). Moreover, majority of studies on student questions are not current (Dillon, 1981, 1988; Graesser & Person, 1994; Pearson & West, 1991). In the literature, studies on student questioning have focused on i) students' questioning strategies (Yang, 2017), ii) ways of encouraging students to ask questions (Hofstein, Navon, Kipnis, & Mamlok Naaman, 2005), iii) questioning frequencies (Dillon, 1988; Graesse & Natalie Person, 1994; Pearson & West, 1991), and iv) classification of student questions (Chin & Brown, 2002; Leikin et al., 2017; Marbach Ad & Sokolove, 2000; Watts et al., 1997). Nevertheless, there are limited number of studies on students' questioning attitudes, perceptions and behaviors (Doğan, 2018; Singh, 2019). Pearson and West (1991) investigated questions of undergraduates in the communication course and concluded that all of the students asked only 3.3 questions per hour. Similarly, Graesser and Person (1994) made observations and found 0.17 question per student to be asked in a class hour. Doğan (2018) aimed to identify questioning attitudes of primary fourth-grade students and developed a scale. In the said research, the students were found to have high levels of openness to questioning and low levels of anxiety about questioning. Singh (2019) aimed to comprehend the nature and dynamics of questioning process that middle school students go through and how it is effective in learning and science. To that end, he examined student discourses both in- and out-of-classroom contexts. As found by the researcher, the students tended to talk and ask in the informal contexts more. Another finding of the research is that the students mostly asked authentic questions in the informal contexts, and a great amount of these questions were investigable. Moreover, as for classroom discourse that was teacher-

oriented or based on textbook questioning, the students rarely had meaningful participation and engagement in the discourse.

Almeida and Neri de Souza (2010) state that research is required on questioning attitudes and behaviors of students in today's classrooms. Similarly, Dillon (1988, 2004) states that so little is known about why students do not ask questions. Studies performed with different educational levels note that students avoid asking questions (Almeida, 2012). Indeed, classroom observation studies conducted for several courses and grades in different countries show that students globally ask very few questions (Dillon, 1988; Good et al., 1987; Graesser & Person, 1994; Singh, 2019). There is no current study on questioning frequencies of students (as reviewed by Chin & Osborne, 2008; Singh, Shaikh, & Haydock, 2019), and no study is observed in the literature on how secondary school students ask questions. Every course undoubtedly has a great importance in students' academic life which shape their future. However, mathematics course plays a particular role as almost all kinds of occupations require mathematics, especially mathematical thinking, more or less today. Questioning skill is also effective in the development of problem solving, decision making, creative, and advanced thinking skills which are important for mathematics course (Chin & Osborne, 2008). Based on these justifications, it is critical to conduct studies that examine the current status of students regarding questioning in mathematics courses, the perceptions of student questions, the effects of teaching experiences in the development of questioning skill, and students' level of questioning skills. Based on the relevant considerations, it was attempted with this study to identify questioning attitudes of secondary school students (fifth, sixth, seventh, and eighth grades) in mathematics courses and investigate their questioning behaviors in line with teacher and student views. To that end, the following questions were answered:

1. What are secondary school students' levels of questioning attitudes?
2. Do secondary school students' levels of questioning attitude in mathematics course differ by gender?
3. What are the questioning frequencies of secondary school students and teachers in mathematics course by grade levels?
4. What are secondary school students' views on questioning in mathematics course?
5. What experiences do secondary school students have about questioning?
6. What are secondary school teachers' views on students' questioning?

2. METHOD

2.1. Research Design

This study utilized the mixed method, and as the research design, the partially mixed sequential equal status design. The said design is used in studies in which quantitative and qualitative data are given equal weight to and collected consecutively. In this design, quantitative and qualitative data are separately analyzed and combined in the interpretation stage (Leech & Onwuegbuzie, 2009).

2.2. Research Group

The study group was composed of fifteen mathematics teachers (eight women and seven men) working at five secondary schools in a city center of a rural province in Turkey and six hundred ninety students of those teachers in six fifth-grade, seven sixth-grade, five seventh-grade, and six eighth-grade classes. The participation was on a voluntary basis, and the participants were selected with convenience sampling. Of the participant teachers, two had six-ten years of service, six had eleven-fifteen years of service, five had sixteen-twenty years of service, and two had twenty years of service and longer. Demographic characteristics of the students are shown in the table below.

Table 1. Distribution of students by gender and grade level

Gender	Grade Level				
	5	**6**	**7**	**8**	**Total**
Female (%)	72 (42.35)	95 (43.58)	67 (50.00)	78 (46.43)	312 (45.22)
Male (%)	98 (57.65)	123 (56.42)	67 (50.00)	90 (53.57)	378 (54.78)
Total (%)	170 (24.64)	218 (31.60)	134 (19.42)	168 (24.34)	690 (100)

Table 1 shows that the study group consisted of 170 fifth-grade, 218 sixth-grade, 134 seventh-grade and 168 eighth-grade students. As seen in the table, there were 312 (45.22%) female and 378 (54.78%) male students in the study group. In order to keep the identities of the participants confidential, student names were coded as S1, S2, S3 … and teacher names were coded as T1, T2, T3,…

2.3. Data Collection Tools

The study data were collected with quantitative and qualitative measures. The Attitude Scale Toward Asking Questions (ASTAQ), written view forms, semi-structured interviews, and observations were utilized in data collection.

2.3.1. Attitude scale toward asking questions (ASTAQ)

It is a 24-item, 5-point Likert scale developed by Doğan (2018) and composed of 2 subscales (*openness to questioning* and *anxiety about questioning*). The subscale *anxiety about questioning* involves items such as "*I feel uneasy when I ask a question.*" and "*I do not ask questions because I am embarrassed.*" whereas *openness to questioning* involves items such as "*I ask questions about topics of my interest.*" and "*I feel more confident when I ask a question.*" In the reliability analysis, reliability coefficients were found to be .77 for *anxiety about questioning*, .76 for *openness to questioning*, and .81 for the full scale. As a result of the reliability analysis, Cronbach's alpha reliability coefficient was found to be .83 for the whole scale. A Cronbach Alpha coefficient between .60 and .69 indicates an acceptable level of reliability, and a value between .70 and .89 indicates a good level of reliability (George & Mallery, 2003). These findings reveal that the reliability of the scale is at an acceptable level.

2.3.2. Written view forms and semi-structured interviews

These measures were prepared based on the literature (e.g. Dillon, 1981, 2004; Doğan, 2018; Marksberry, 1979) and submitted to the opinion of two experts who specialize in mathematics education. Questions of written view forms and semi-structured interview aimed to learn about teacher and student views on the need for and importance of questioning, situations or behaviors that hinder and support questioning skills, and reflections on the questioning process. While written view forms were implemented to the students, semi-structured interviews were performed with the teachers. In addition to the questions in written view forms, for exploring to what extent their academic experiences had been effective in the development of their questioning skills, the students were asked to write down anecdotes in the format prepared by Dillon (1981) as follows: *"I remember once when I was in (...), I/someone asked the question (...), and the teacher (...). I felt (...) and I thought or said to myself: (...)"*

2.3.3. Observation

Quantitative observations were used in the study as it included standardization of all required observational processes to obtain reliable research information (Johnson & Christensen, 2014). Event recording technique, which is the most appropriate recording technique, was used in cases where the information obtained to solve a problem in the observations was evaluated together and detailed

information about an event was desired. Since the most important characteristic of observable events is the repetitive occurrence of behaviors, these behaviors were measured throughout the recording during the observations. The measurements are presented by calculating the frequency and percentage of the observed behavior (Yalçıner, 2006). Unattended quantitative observation was performed for 48 hours in total; each class was observed for two hours (12 hours in fifth-grade classes, 14 hours in sixth-grade classes, 10 hours in seventh-grade classes, and 12 hours in eighth-grade classes) for questioning frequencies and behaviors of teachers and students in the classroom setting.

2.4. Data Analysis

SPSS 22.0 statistical package program was used in the analysis of quantitative data. Normality test was applied to determine whether the test results obtained before the analysis of the data showed a normal distribution. In the normality test, the kurtosis and skewness values of the data groups were examined. The groups whose skewness and kurtosis coefficients have values between -1.5 and +1.5 are considered to have normal distribution (Tabachnick & Fidell, 2013). When the data for the applied tests were examined, it was concluded that results showed a normal distribution. Thus, it was deemed appropriate to use parametric tests in the analyses. In the analysis of quantitative data from the study, independent samples t-test and analysis of varyans (ANOVA) of exploratory statistical techniques and frequency, percentage, mean, and standard deviation values of descriptive statistics were utilized. Independent samples t-test was used for independent groups in pairwise comparisons, and ANOVA test was used in multiple comparisons. Tukey test was used to determine the difference between groups in multiple comparisons and the significance level (p) was taken as .05 in this study.

13 of the items in the ASTAQ are (positive) statements that reflect the state of being open to asking questions. 11 of the items consist of (negative) expressions expressing anxiety. Negative items in the scale were reverse coded and included in the analysis. The maximum score that can be taken from the sub-dimension of *openness to questioning* is 65, the maximum score that can be taken from the sub-dimension of being *anxiety about questioning* is 55, and the maximum score that can be taken from the whole scale is 120. Higher scores from the scale mean that the student is open to ask questions while lower scores mean that the student is not open to ask questions and has high levels of anxiety about questioning (Doğan, 2018).

Content analysis technique was utilized to analyze qualitative data. Although qualitative data analysis can be performed using several methods and practices, the Miles-Huberman model is usually used for implementation and interpretation, which involves three steps of data reduction, data display, and conclusion: drawing/verifying (Miles & Huberman, 1994). This model was used in this study. Student and teacher views were included in the study to support the findings obtained through content analysis from written view forms and semi-structured interviews. The qualitative data from the study were coded individually by two experts. The coding by the experts were compared by the list of codes and themes; agreements and disagreements were identified and discussed to make required adjustments. Inter-rater reliability was calculated as 91% which is an acceptable rate (Miles & Huberman, 1994).

3. FINDINGS

Findings of the research are presented under separate headings in line with the subproblems.

3.1. Findings concerning the First Sub-problem of the Research

The first subproblem of the research is *"What are secondary school students' levels of questioning attitudes?"*. Descriptive statistics about the students' levels of questioning attitudes by grade levels are presented in Table 2.

Table 2. Students' mean scores of ASTAQ by grade levels

Grade Level	N	$\overline{X}$	S
5	170	95.80	12.68
6	218	91.78	12.99
7	134	92.19	14.54
8	168	94.58	14.62
Total	690	93.53	13.71

According to the table, the students' general mean score of questioning attitudes was found to be $\overline{X}$ =93.53 out of 120 points, which is a high score. By grade level, students' mean scores of questioning attitudes were found to be $\overline{X}$ =95.80, $\overline{X}$ =91.78, $\overline{X}$ =92.19, and $\overline{X}$ =94.58, respectively. The fifth-grade students were observed to have the highest mean score while the sixth-grade students had the lowest mean score from ASTAQ.

It was also investigated whether levels of questioning attitude among the students varied by grade level. The analysis results are given in Table 3.

Table 3. ANOVA results of students' ASTAQ scores by grade level

Subscales	Source of Variance	Sum of Squares	Sd	Mean of Squares	F	p	Significant Difference	Effect Size
Anxiety about Questioning	Between Groups	565.948	3	186.649	2.639	.051	None	
	Within Groups	49033.072	686	71.477				
	Total	49599.020	689					
Openness to Questioning	Between Groups	719.442	3	239.814	3.318	.020*	5-6	.014
	Within Groups	49588.339	686	72.286				
	Total	50307.781	689					
Total	Between Groups	1985.508	3	661.836	3.558	.014*	5-6	.015
	Within Groups	127622.412	686	186.039				
	Total	129607.920	689					

*p< 0.05

Whether the students' mean subscale scores of ASTAQ differed by grade level was examined with ANOVA, and Tukey's test was performed to find out between which grade levels the differences, if any, were (see Table 3). Analysis results indicated that there was a significant difference among students' levels of questioning attitude by grade level [$F_{(3-686)}$ = 3.558, p<.05]. In other words, students' questioning attitudes significantly differed by their grade levels. As shown by Table 3, students' questioning attitudes did not differ by grade level in the anxiety about questioning subscale whereas their attitudes significantly differed in the openness to questioning subscale. It was understood from the result of Tukey's test that this difference was due to the fifth-grade students' higher mean score than the sixth-grade students' mean score [$F_{(3-686)}$ =3.318, p<.05]. A similar evaluation was made for the subcategories of the scale, and the analysis results are shown in Table 4.

Table 4. Descriptive statistics for ASTAQ and its subscales

Subscales	Grade Level	N	$\overline{X}$	S
Anxiety about Questioning	5	170	44.93	8.32
	6	218	43.54	8.36
	7	134	43.48	8.94
	8	168	45.60	8.30
	Total	690	44.37	8.48
Openness to Questioning	5	170	50.87	7.54
	6	218	48.22	8.08
	7	134	48.72	8.64
	8	168	48.99	9.75
	Total	690	49.16	8.54

According to Table 4, the students were anxious above moderate levels with a mean score of $\overline{X}$ =44.37 out of 55 points in the anxiety about questioning subscale. As for the openness to questioning subscale, the students had high levels of questioning with a mean score of $\overline{X}$ =49.16 out of 65.

3.2. Findings concerning the Second Sub-problem of the Research

This section attempts to find an answer to the second subproblem of the research, which is "*Do secondary school students' levels of questioning attitude differ by gender?*". The relationship between the students' questioning attitudes and their genders was analyzed using the independent samples t-Test. Table 5 presents the findings about whether the student attitudes differed by gender.

Table 5. t-Test results for ASTAQ scores by gender

Gender	N	$\overline{X}$	S	Sd	t	p
Female	312	94.04	13.32	688	.898	.370
Male	378	93.10	14.17			

*p< 0.05

Questioning attitudes of the students did not differ significantly by gender and were found to be on a high level [$t_{(688)}$ = .898, p<.05]. The mean scores of questioning attitudes were $\overline{X}$ =94.04 for the female students and $\overline{X}$ =93.10 for the male students. It can be inferred from this finding that there was no significant difference between questioning attitude and gender.

3.3. Findings concerning the Third Sub-problem of the Research

The third subproblem of the research is *"What are the questioning frequencies of secondary school students and teachers in mathematics course by grade levels?"*. This section provides the frequency and percentage values obtained in the analysis of the questions asked by the mathematics teachers and students based on the 48-hour observation.

Table 6. Questioning frequencies of teachers and students in mathematics course

Questioning	Grade Level				
	5	**6**	**7**	**8**	**Total**
Teacher (%)	398 (93.87)	501 (93.82)	610 (96.06)	1078 (94.23)	2587 (94.52)
Student (%)	26 (6.13)	33 (6.18)	25 (3.94)	66 (5.77)	150 (5.48)
Total	424	534	635	1144	2737

As seen in Table 6, the teachers asked more questions with higher grade levels. According to the observation, a total of 2737 questions were asked; 94.52% of these questions were asked by the teachers while 5.48% were asked by the students. Considering the grade levels, the sixth-grade students (6.18%) asked more questions than the students in any other grade level. Furthermore, the fifth-, sixth-, seventh-, and eighth-grade grade students were observed to ask 2.16, 2.35, 2.50, and 5.50 questions on average in a class hour, respectively. In total, notably, the students asked an average of 3.12 questions. As for the teacher questions, the teachers asked 33.16 questions in the fifth grade, 35.78 questions in the sixth grade, 61 questions in the seventh grade, and 89.83 questions in the eighth grade on average. In other words, both the students and teachers asked more questions in the secondary school mathematics courses with higher grade levels.

3.4. Findings concerning the Fourth Sub-problem of the Research

This section presents the findings achieved for the fourth subproblem of the research, which is *"What are secondary school students' views on questioning in mathematics course?"*. It was aimed with this problem to explore the students' questioning attitudes and perceptions of questioning in mathematics course. First, the students were asked in which course they asked more questions, and it was found that they asked the highest number of questions in mathematics (54.20%) and science (41.30%) courses. Next, the students were asked to express what questioning meant for them. The answers included an effort to learn about the unknown (42.46%), the purpose of learning the unknown from someone who knows about it (22.17%), the desire to satisfy their curiosity (9.85%), a way of learning (9.42%), looking for answers (1.74%), the desire to solve the confusion in their mind (0.87%), and an indicator of participating in the course (0.43%). Statements of some of the students on the topic are given below:

> *"I think that questioning is to ask something we are curious about in a subject."* (S14, Fifth-grader)
> *"I think that questioning is some kind of learning tool for something you do not understand or with which I can say, 'Could it be like this as well?'"* (S383, Sixth-grader)
> *"Consulting someone to find a way of solution."* (S389, Seventh-grader)
> *"It is to ask about something you do not know or understand to the teacher or someone else who knows about it."* (S411, Seventh-grader)

Majority of the students thought that questioning is important and necessary. Themes and codes derived from the analysis of the participant justifications for their views on why it is important to question in mathematics course are given in Table 7.

Table 7. Student views on the importance of questioning in mathematics course

Themes	Codes	5		6		7		8		Total	
		f	%	f	%	f	%	f	%	f	%
Importance of Course	Mathematics is an important course	35	20.59	31	14.22	25	18.66	17	10.12	108	15.65
	Mathematics is necessary in all areas of life	22	12.94	14	6.42	6	4.48	20	36.90	62	8.98
	Mathematics is a course that is hard to understand	19	11.18	26	11.93	16	11.94	13	7.74	74	10.72
	Mathematics is a cumulative course	-	-	-	-	7	5.22	4	2.38	11	1.59
Learning	Learning the unknowns	75	44.12	80	36.70	56	41.79	44	26.19	255	36.96
	Preventing confusion in the mind	4	2.35	6	2.75	-	-	1	0.59	11	1.59
	Not mislearning	3	4.28	7	3.21	2	1.49	1	0.59	13	1.88
	The idea that teacher thinks something is understood if no question is asked	2	1.18	3	1.38	-	-	-	-	5	0.72
	Curiosity	2	1.18	1	0.46	-	-	-	-	3	0.43
Achievement	Being successful	31	18.23	9	4.13	9	6.72	11	6.55	60	8.69
	Possibility that a question will be asked about it in the exam	23	13.53	12	5.50	7	5.22	12	7.14	54	7.82
	High coefficient of mathematics questions in High School Entrance Exam (HSEE)	-	-	5	17.86	3	2.34	13	7.74	21	3.04
	For mathematics grade in report card	-	-	1	0.46	-	-	-	-	1	0.14
	Not to fall behind peers	-	-	1	0.46	-	-	2	1.19	3	0.43

According to Table 7, three themes of *importance of course, learning* and *achievement* were derived about the importance of questioning in mathematics course. In the theme of the *importance of course*, the most emphasized justifications were 'mathematics is an important course' (15.65%) and 'mathematics is a course that is hard to understand' (10.72%). In addition, the students thought that questioning is important in mathematics course because 'mathematics is necessary in all areas of life' (8.98%) and 'mathematics is a cumulative course' (1.59%). Student views on the relevant topic can be found below:

> *"We will see this course in every area of life. My mathematics need to be good to get somewhere in future. So, it is very important for me to ask questions in mathematics course."* (S14, Fifth-grader)

> *"Of course, it is very important to question. Because if we miss even one subject in this course, it will be very difficult to understand it later; it will be hard for you to learn. And mathematics is used a lot in everyday life."* (S585, Seventh-grader)

In the theme *learning*, as understood from Table 7, the most emphasized justifications were 'learning the unknowns' (36.96%) and 'not mislearning' (1.88%). The following is the student opinions on the topic:

> *"It is important to question in mathematics. If we did not understand it, we should learn it because its HSEE coefficient score is high."* (S191, Sixth-grader)

> *"It is important. Because mathematics is important in every area. I think we cannot learn if do not question."* (S638, Eighth-grader)

Regarding the theme *achievement*, the most expressed justifications were found to be 'being successful' (8.69%), 'possibility that a question will be asked about it in the exam' (7.82%) and 'high coefficient of mathematics questions in HSEE' (3.04%). The students expressed their views as below:

> *"I think it is important; in the end, it is a difficult course and the subjects are really interesting. Now, if you do not understand one of the subjects and not ask about it, you cannot understand the subject and have difficulty in exams."* (S383, Sixth-grader)

> *"I think it is so much important. Because mathematics point coefficient is high in HSEE and almost all points come from mathematics."* (S636, Eighth-grader)

As stated by the students, 335 (48.55%) refrained from asking their mathematics teachers questions while 355 (51.45%) of them did not. In the analysis of student views on why they did not ask questions, two themes which are *frustration* and *fear* and three subthemes were obtained. Relevant themes and codes are presented in Table 8.

Table 8. Student views on why they did not ask their mathematics teachers questions

Themes		Codes	5		6		7		8		Total	
			f	%	f	%	f	%	f	%	f	%
Frustration	Teacher-oriented	Teacher is busy or delays answering the question	115	67.65	128	58.71	71	52.98	105	62.50	419	60.72
		Teacher does not want any question	60	35.29	53	24.31	26	19.40	36	21.43	175	25.36
		Teacher does not have the time	-	-	11	5.04	11	8.21	13	7.74	35	5.07
	Peer-oriented	Peer pressure	10	5.88	8	3.67	4	2.98	13	7.74	35	5.07
		Peers ask too many questions	2	1.18	5	2.29	3	2.24	3	1.78	13	1.88
	Student-oriented	Not wanting to interrupt the course	86	50.59	109	50.00	85	63.43	97	57.74	377	54.64
		Disliking the course	1	0.59	-	-	-	-	-	-	1	0.14
		Thinking that he/she will learn later	-	-	5	2.29	10	7.46	-	-	15	2.17
		Not liking asking questions	-	-	4	1.83	5	3.73	6	3.57	15	2.17
		Distrust in himself/herself	-	-	3	1.38	3	2.24	3	1.78	9	1.30
Fear	Teacher-oriented	Teacher finds the question unnecessary or simple	58	34.12	110	50.46	50	37.31	65	38.69	283	41.01
		Negative effect of previous questioning experiences	50	29.41	77	35.32	43	32.09	49	29.17	219	31.74
		Teacher becomes angry	14	8.23	38	17.43	17	12.69	8	4.76	77	11.16
		Teacher mocks the question	4	2.35	-	-	1	0.75	-	-	5	0.72
	Peer-oriented	Thinking that the question can be easily answered or is unnecessary	64	37.65	89	40.82	54	40.30	58	34.52	265	38.40
		Others mock the question	52	30.59	93	42.66	50	37.31	44	26.19	239	34.64
		Embarrassment	22	12.94	42	19.27	20	14.92	21	12.50	105	15.22
	Student-oriented	Thinking that the friends will not understand it	57	33.53	108	49.54	61	45.52	59	35.12	285	41.30
		Thinking that he/she will ask an incorrect or unimportant question	16	9.41	12	5.50	10	7.46	9	5.36	47	6.81
		Thinking that he/she will disgrace himself/herself	-	-	9	4.13	4	11.76	3	1.78	16	2.32

It is seen in Table 8 that the students frequently emphasized the reasons 'teacher is busy or delays answering the question' (60.72%), 'student does not want to interrupt the course' (54.64%) and 'teacher does not want any question' (25.36%) in the *frustration* theme. Student views on the *frustration* theme are given below:

> *"[…] I refrain from asking, do not want to interrupt the course and distract my friends."* (S378, Sixth-grader)
>
> *"I sometimes cannot find the teacher, and sometimes I am embarrassed if the question I will ask is a simple one. […] I am sometimes afraid that the teacher will mock me."* (S389, Seventh-grader)

Regarding the *teacher-oriented* subtheme of the *fear* theme, the most mentioned justifications of the students included 'teacher finds the question unnecessary or simple' (41.01%) and 'negative effect of previous questioning experiences' (31.74%). The students expressed their views in this theme as follows:

> *"I am afraid to ask questions. I am afraid that I will say something unnecessary."* (S18, Fifth-grader)

> *"I am afraid and embarrassed to ask questions. […] Because some subjects I am not good at are easy, and therefore, I am afraid that my mathematics teacher will get angry with me when I question."* (S247, Sixth-grader)

> *"[…] Because I would be afraid that my teacher would get angry with me because I did not understand and could not ask some of my questions."* (S608, Eighth-grader)

The justifications in *the peer-oriented* subtheme of the fear theme included 'thinking that the question can be easily answered or is unnecessary' (38.40%), 'others mock the question' (34.64%), and 'embarrassment' (15.22%) as seen in Table 8. Student views on the topic can be found below:

> *"[…] I am sometimes embarrassed and afraid that they will mock me. And I ask my teacher in private most of the time in case my friends will mock me."* (S89, Fifth-grader)

> *"[…] I am embarrassed. I am afraid that they will judge and criticize me. And I cannot ask questions even if I want to."* (S506, Seventh-grader)

In the *student-oriented* subtheme, 'thinking that the friends will not understand it' (41.30%), 'thinking that he/she will ask an incorrect or unimportant question' (6.81%) and 'thinking that he/she will disgrace himself/herself' (2.32%) were among the codes derived from the student views. The student views regarding the topic are given below:

> *"[…] I mean, because my friends will mock me. They would say, 'You do not know anything at all'".* (S363, Sixth-grader)

> *"Sometimes I find my questions ridiculous and become embarrassed in case they will say that I do not know anything about this course. […] I am afraid to ask questions; I do not understand the mathematics course."* (S636, Eighth-grader)

Regarding whether students ask their friends questions, 84 (49.41%) of the fifth-graders, 110 (50.45%) of the sixth-graders, 75 (55.97%) of the seventh-graders and 114 (67.85%) of the eighth-graders mentioned that they asked their friends questions. The students tended to ask their friends more questions with higher grade levels. Notably, majority of the students justified their status of questioning. The themes and codes obtained in the analysis of the student views about their justification of asking their peers questions are given below.

Table 9. Student views on why they ask their peers questions

Themes		Codes	5		6		7		8		Total	
			f	%	f	%	f	%	f	%	f	%
Asking a peer question	Not being able to ask the teacher question	Being shy	6	3.53	11	5.04	4	2.98	1	0.59	22	3.19
		Failure to reach the teacher	2	1.18	9	4.13	-	-	-	-	11	1.59
		Teacher is busy	-	-	-	-	2	1.49	5	2.98	7	1.01
	Learning from a peer	Enabling learning together	44	25.88	53	24.31	36	26.86	54	32.14	187	27.10
		Receiving opinions	10	14.28	3	1.38	3	2.24	13	7.74	29	4.20
		Asking question without being afraid	-	-	7	3.21	-	-	1	0.59	8	1.16
		Asking question without being shy	-	-	5	2.29	3	2.24	7	4.17	15	2.17
		Having a better understanding of what they tell	-	-	-	-	4	2.98	2	1.19	6	0.87
Not asking a peer question	Not trusting the peer	Teacher explains better	23	13.53	34	15.60	17	12.69	11	6.55	85	12.32
		Thinking that they do not know it	14	8.23	10	4.59	7	5.22	7	4.17	38	5.51
		Thinking that he/she knows better than the peers	3	1.76	3	1.38	2	1.49	1	0.59	9	1.30
		Thinking that they cannot explain well	-	-	1	0.46	-	-	1	0.59	2	0.29
	Being shy of peer	Embarrassment	4	2.35	3	1.38	-	-	2	1.19	9	1.30
		Not wanting to disturb them	2	1.18	2	0.92	-	-	3	1.78	7	1.01
		They do not want to answer	2	1.18	-	-	-	-	-	-	2	0.29
		Possibility that they get mad	-	-	3	1.38	-	-	2	1.19	5	0.72
		Not wanting them to think that they know better	-	-	-	-	5	3.73	9	5.36	14	23.33
	Teacher's negative reaction	Teacher wants to be the only one who is asked questions	13	7.65	15	6.88	-	-	-	-	28	4.06
		Teacher gets angry when they ask a friend question	-	-	2	0.92	3	2.24	2	1.19	7	1.01

According to Table 9, the theme asking a peer question had two subthemes which are not being able to ask the teacher question and learning from a peer. The most repeated justifications in the theme asking a peer question were 'enabling learning together' (27.10%) and 'receiving opinions' (4.20%). The student views on the topic are provided below:

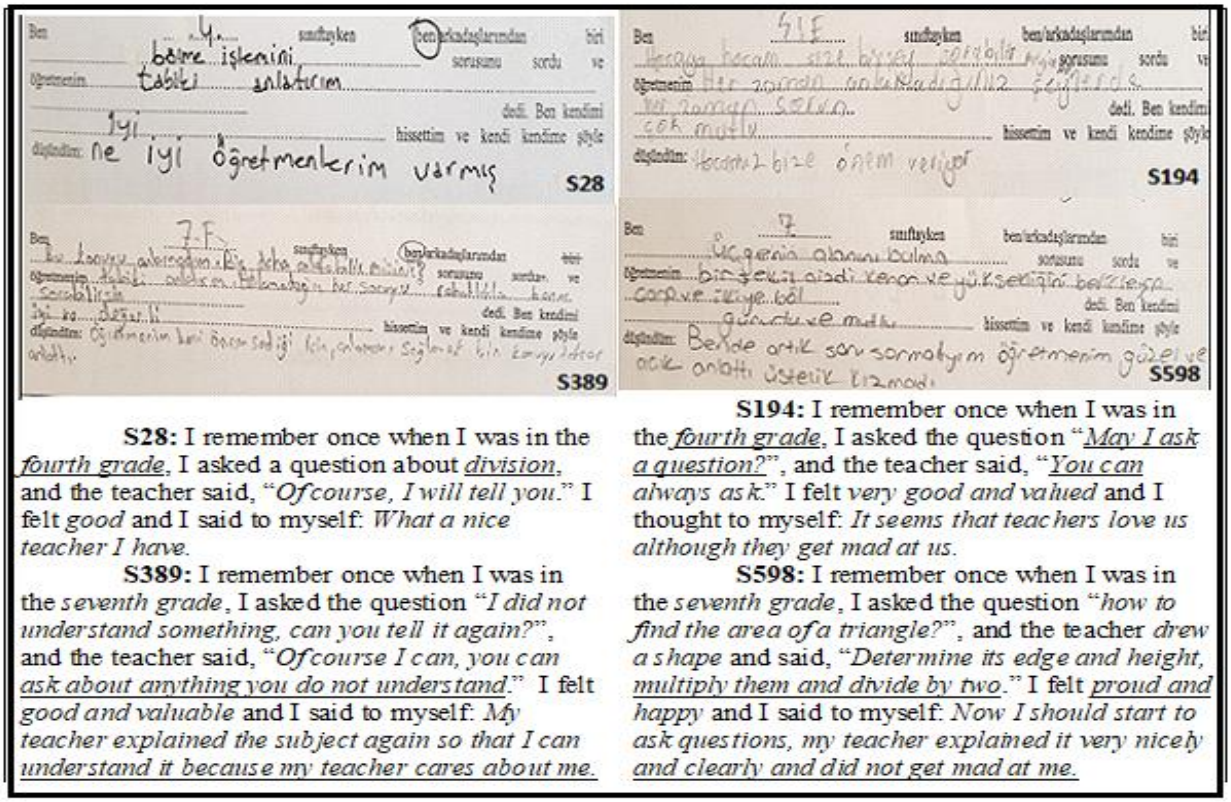
> *"Our teacher says, 'Consult your friends with questions. If they cannot answer your question, come to me altogether."* (S14, Fifth-grader)
>
> *"I ask my friends questions. I exchange information with my friends, we learn together."* (S598, Eighth-grader)

In the theme *not asking a peer question*, three themes were obtained, which are *not trusting the peer*, *being shy of peer* and *teacher's negative reaction*. Student views regarding this theme can be found below:

> *"I do not ask my friends any question. Because they look down at me or do not care about me, saying 'Is this the question you did not understand?'"* (S585, Eight-grader)

3.5. Findings concerning the Fifth Sub-problem of the Research

The fifth subproblem of the research is *"What experiences do secondary school students have about questioning?"*. This section presents positive and negative anecdotes provided by the students about their past experiences of mathematics course. Positive anecdotes provided by the students about their questioning experience are given below:



S28: I remember once when I was in the *fourth grade*, I asked a question about *division*, and the teacher said, "*Of course, I will tell you.*" I felt *good* and I said to myself: *What a nice teacher I have.*

S194: I remember once when I was in the *fourth grade*, I asked the question "*May I ask a question?*", and the teacher said, "*You can always ask.*" I felt *very good and valued* and I thought to myself: *It seems that teachers love us although they get mad at us.*

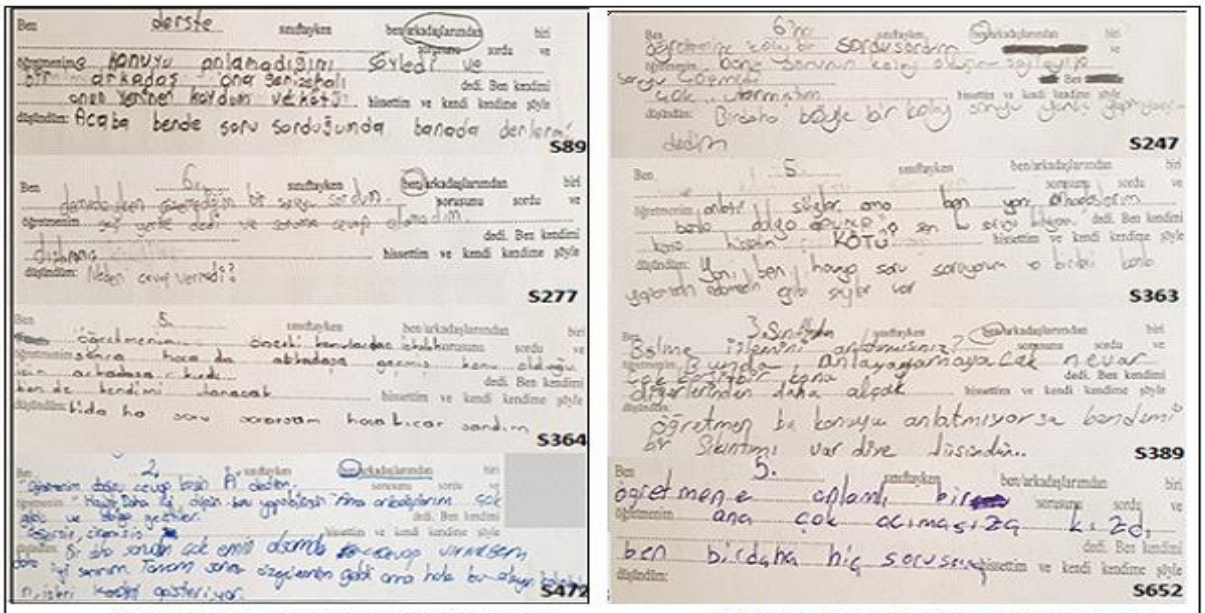
S389: I remember once when I was in the *seventh grade*, I asked the question "*I did not understand something, can you tell it again?*", and the teacher said, "*Of course I can, you can ask about anything you do not understand.*" I felt *good and valuable* and I said to myself: *My teacher explained the subject again so that I can understand it because my teacher cares about me.*

S598: I remember once when I was in the *seventh grade*, I asked the question "*how to find the area of a triangle?*", and the teacher *drew a shape* and said, "*Determine its edge and height, multiply them and divide by two.*" I felt *proud and happy* and I said to myself: *Now I should start to ask questions, my teacher explained it very nicely and clearly and did not get mad at me.*

Figure 1. Student anecdotes about their positive experiences in mathematics course

As seen in Figure 1, students' positive attitudes about asking their teachers questions made them feel good, valuable and cared about and made them not be shy of asking questions in the future.

It was noted that the students mentioned more negative experiences (58.40%) in their anecdotes of questioning. Figure 2 presents anecdotes of some of the students about their negative experiences.



S89: I remember once when I was in a *lower grade*, one of my friends asked a question *because he/she did not understand the subject*, and one of the friends called him/her *stupid*. I *put myself in his/her shoes* and I felt *bad* and I thought to myself: *Would they call me that if I asked a question?*

S247: I remember once when I was in the *sixth grade*, I asked *my teacher a simple question*, and my teacher *told me that the question was simple and did not answer it*. I felt *very embarrassed* and I thought to myself: *I will never make the same mistake again by asking such a simple question.*

S277: I remember once when I was in the *sixth grade*, I *asked my teacher a question that I could not answer*, and my teacher told me to *go to my desk* and I *could not get an answer to my question*. I felt *excluded* and I thought to myself: *Why did not he/she answer?*

S363: I remember once when I was in the *fifth grade* and *asked a question*, my teacher *explained it*, but said, *"Is this the question you could not answer?" when my friends mocked me*. I felt *bad*. I felt *very embarrassed* and I thought to myself: *I ask the teacher a question and they say I could not do it.*

S364: I remember once when I was in the *fifth grade*, one of my friends asked the teacher a question *about previous subjects*, and my teacher *get mad at* my friend because *the question was about a previous subject.* I felt *embarrassed* and I thought to myself: *If I ask a question too, the teacher will become angry.*

S389: I remember once when I was in the *third grade*, I asked my teacher the question "*Can you explain the division?*", and my teacher said, "*Why on earth you could not understand it? It is a very easy subject.*" I felt *I was on a lower level than my friends* and I thought to myself: *If the teacher will not explain the subject again, there must be something wrong with me.*

S472: I remember once when I was in the *second grade*, I *asked my teacher if the right answer was the option A*, and my teacher said, *"No, think better, you can do it." But my friends laugh at me so much and mocked me.* I felt *worthless and unimportant* and I thought to myself: *I think it is better not to answer even if I am sure of my question and that my answers are right. Okay, I regained my confidence later, but I am still under the influence of this incident.*

S652: I remember once when I was in the *fifth grade*, one of my friends *asked the teacher a very logical question and the teacher got angry with him/her ruthlessly*. I felt like *I would never ask anyone a question again.*

Figure 2. Student anecdotes about their negative experiences in mathematics course

In Figure 2, it can be observed that the students felt embarrassed, excluded, bad and worthless, and consequently, blamed themselves or decided not to ask any question again as a result of reactions given by their teachers. Unlike others, 9 of the students who wrote about their negative experiences provided examples through the reactions of peers. This was exemplified with the anecdotes of S89, S363 and S472 in Figure 1. It is understood from the relevant anecdotes that peers insulted and mocked them when they asked a question, the students felt bad and worthless, and therefore, they started to refrain from questioning.

3.6. Findings concerning the Sixth Sub-problem of the Research

The sixth subproblem of the research is *"What are secondary school teachers' views on students' questioning?"*. This section examines teacher perceptions of student attitudes toward questioning, and these are supported by direct quotes. With the views of the mathematics teachers, it was observed that they mentioned the importance of student questioning, the purposes of their questions, and the reasons why they did not ask question. Table 10 presents teacher views on the importance of student questioning.

Table 10. Mathematics teacher views on the importance of student questioning

Themes		Codes	Teacher-
From student's perspective	Learning	It facilitates a better understanding of the subject	T1, T7, T9, T13, T14
		It helps identify the points that are not understood	T2, T3, T7, T10
		It provides reinforcement	T2, T8, T12, T13
		Mathematics is a cumulative discipline	T6
		It provides active learning	T8
		It satisfies their curiosity	T8
		It is a good instructor	T15
	Skills	It improves critical thinking skills	T3, T11
		It improves mathematical thinking skills	T7, T11
		It improves reasoning skills	T5
		It improves problem-solving skills	T9
		It improves communication skills	T14
		It improves creativity	T15
From teacher's perspective	Teaching	It provides self-evaluation	T4, T5, T13
		It provides exchange of ideas	T5
		It provides information about student's learning and knowledge level	T13
		It enables a student-centered teaching	T15
	Motivation	It indicates that there is interest in the course	T4, T5, T14
		It encourages one to lecture eagerly	T3
		It provides a distance from monotonous teaching	T3

Two themes were derived from the analysis of teacher views, which are from *student's perspective* and *teacher's perspective*. While the importance of questioning was addressed within the scope of *learning* and *skills* from *student's perspective*, it was evaluated within the scope of *teaching* and *motivation* from *teacher's perspective*. It is understood from Table 9 that the most emphasized codes were related to the *learning* subtheme. Teacher views on the relevant topic are presented below:

> *"[…] It indicates student interest in the course. It also shows us the points we miss when explaining a given concept to students."* (T4)
> *"When there is a question, subject or problem that students do not understand, they may have trouble with future subjects as there will be disconnection due to the nature of mathematics […]."* (T6)

Another topic emphasized by the teachers was the purposes of student questions. The teachers discussed students' questioning within two themes which are *for learning* and *for hindering the course*, and the themes and codes derived are provided in Table 11.

Table 11. Mathematics teacher views on the purposes of student questions

Themes	Codes	Teacher-
For learning	Comprehension	T2, T3, T6, T7, T10, T11, T12, T13, T15
	Reinforcement	T4, T5, T13, T14
	Developing different perspectives of subject and having their accuracy confirmed	T2, T7, T9
	Making up their deficiencies	T8, T13
	Resolving the contradiction so that there is no misconception	T7
For hindering the course	Interrupting or hindering the course	T1, T2, T3, T4, T8, T9, T11, T14, T15
	Drawing attention	T3, T7, T8, T9, T14

As seen in Table 11, the purposes most emphasized by the teachers were 'comprehension' in the theme *for learning* and 'interrupting or hindering the course' in the theme for *hindering the course*. Teacher views on the topic can be found below:

> *"Most student questions are for disrupting the class. Albeit in minority, there are students who ask about something they do not understand, for proposing a different solution and having its accuracy confirmed and take the question to the next step and ask about its implementations in different subjects."* (T2)
> *"[…] They ask about the things they do not understand, yes, but they can sometimes ask questions to stand out unnecessarily and interrupt the course."* (T3)

As a remarkable finding of the study, all of the teachers thought that their students could ask them questions conveniently. The teachers expressed their opinions on this topic as follows:

> *"I think they ask questions easily most of the time. But they sometimes cannot do it. That may be my mistake. I am sometimes obliged to go fast to explain the subjects in time. When going fast, I notice that they do not ask any question."* (T2)
> *"I think the students can ask their questions. Because I answer patiently."* (T6)
> *"I think the children finds the confidence in me to ask questions, they can ask conveniently."* (T10)
> *"[…] It depends on the nature of students. Some ask without hesitating while some are influenced by their friends, become shy and cannot ask. I always repeat to minimize this situation. I explain this situation."* (T12)
> *"[…] Absolutely, they can ask conveniently. I remind them, "You can always ask questions." In the class, we also answer the questions in workbooks which they could not answer."* (T13)

Another point deliberated by the teachers was the reasons why students did not ask questions. The teachers described the reasons why students did not ask questions as being *student-*, *peer-* and *teacher-oriented*. Relevant themes and codes are given in the table below.

Table 12. Mathematics teachers' views on why their students cannot ask questions

Themes	Codes	Teacher-
Student-oriented	Not caring about the course	T2, T6, T8, T13
	The thought that "I do not understand mathematics, so I do not have to bother"	T1, T2, T7
	Not studying	T13
Peer-oriented	Embarrassment and refrainment	T7, T10
	Others mock the question	T3, T5
	Peer pressure	T2, T10
Teacher-oriented	Fear	T1, T2, T3, T5, T8, T9, T11, T12, T14
	Being shy	T2, T4, T6, T12, T15

It can be understood from Table 12 that the most emphasized theme was *teacher-oriented* regarding the reasons why students did not ask questions. Finally, the teachers were asked what they did for encouraging students to question. Majority of them said that they told them to ask questions if they have any during the class. Unlike others, T2 and T12 provided the following statements:

> *"I ask them. I compel them to ask question to make a progress. I encourage them, saying, "You can do it", so they ask about what they do not understand. I also want them to ask their friends questions. I ask prize questions and ensure that they get my help by asking questions to answer it. […]"* (T2)

> *"I divide the question into parts. I constantly ask them whether they understand it to a certain point. When it is gradual like this, students can determine what they do not understand and can ask questions."* (T12)

4. DISCUSSION and CONCLUSION

In this era that orientate towards the criticism of the modern world, raising individuals who have acquired questioning skills is getting even more important; therefore, the greatest task falls to the education (Aslan, 1994; Singh, 2019). Several roles of question can be mentioned in education. However, it is an obligation to focus on student questions rather than teacher questions and to value student questions rather than highlighting student answers so that higher thinking levels of students can be supported (Almeida, 2012; Dillon, 1981). Based on the said rationale, teacher and student attitudes toward questioning and their perceptions of questioning were examined in this study.

First, ASTAQ was implemented to the students; in light of the mean scores, the students were found to have high levels of questioning attitudes in mathematics course, and the fifth-graders had the highest mean score while the sixth-graders had the lowest mean score. In parallel with the results of the present study, Doğan (2018) investigated the questioning attitudes of fourth-grade students and concluded that they had high levels of attitudes. Whereas the students had high scores in the *openness to questioning* subscale of ASTAQ, the results from *anxiety about questioning* subscale indicated that they were anxious above moderate levels. Similarly, Doğan (2018) found the students to have a high mean score in the *openness to questioning* subscale; nevertheless, the students were anxious below moderate levels in the *anxiety about questioning* subscale, which contradicts the relevant finding in the present study. Considering the relevant results together, one can argue that students' levels of anxiety about questioning increased once they progressed to the secondary school. It was also found that there was no significant difference between questioning attitude and gender. Similarly, Good et al. (1987) concluded that the female and male students asked the same number of questions with older age. Jones, Howe and Rua (2000) observed in the science course that the male students were less afraid of asking questions than the female students.

Despite the educational importance of student questioning, researches in different educational levels and contexts indicate that students avoid questioning or ask very few questions (Madhu, 2015; Singh, Shaikh, & Haydock, 2019). In the present study, it was found that the sixth-graders asked questions more frequently than the students in other grade levels. This finding contradicts students' mean scores of ASTAQ by grade level. When explaining the reason, the students stated that they had to ask questions because mathematics course is of critical importance although they were afraid. As for the average number of questions asked by the students per hour in total, it was observed that number of questions increased with higher grade levels, and it was noted that the students asked an average of 3.12 questions in a class hour, which means that the students asked very few questions. In parallel with this result of the study, there are studies in the literature which found student questions to be very infrequent (Almeida & Neri de Souza, 2010; Dillon, 1988; Good et al., 1987; Graesser &

Person; 1994; Pearson & West, 1991). Although there have been many years since the said studies were conducted; in other words, prevalence and importance of student questioning have been increasingly emphasized, this study indicates questioning frequencies of students are still very low in today's mathematics classes. The primary reason for this might be the fact that appropriate conditions are not provided for students to ask questions. Indeed, Watts et al. (1997) state that students will ask questions when they have high confidence and self-esteem in terms of learning and know that their questions are valued. Yet, unlike the student questions, frequency of teacher questions was found to be quite high in all grade levels in the study. It was accordingly found that the frequency of teacher questioning in a class hour increased with higher grade levels. Similarly, Graesser and Person (1994) argued that teachers asked 30 to 120 question on average in a class hour.

Questions are one of the most powerful and easiest tools that can be used to make meaning of information by students who are curious, think and do research (Dillon, 2004; Doğan, 2018; Singh, 2019). The students were asked to state in which courses they asked more questions and what questioning meant for them. It was found that the students asked the highest number of questions in mathematics and science courses. Student questions suggest that they think about the ideas they are presented with and try to associate those ideas with other things they know. Source of student questions is a gap or inconsistency in students' knowledge or the desire to expand their knowledge toward a certain direction (Almeida & Neri de Souza, 2010; Chin & Osborne, 2008; Dillon, 1981). In this study, in parallel with the considerations in the literature, the students defined questioning as an effort to learn about the unknown, the purpose of learning the unknown from someone who knows about it, the desire to satisfy their curiosity, a way of learning, looking for answers, the desire to solve the confusion in their mind, and an indication of participating in the course. Regarding the student views on the importance of questioning in mathematics course, the most emphasized justifications were 'learning the unknowns' and that 'mathematics is an important course'. As stated by the students, the reason was exams of transition between educational levels such as the HSEE. It is known that academic skills in mathematics and science are essential to national and international exams of academic achievement monitoring, and there is a focus on improving these courses. These results suggest that secondary school students believe in the necessity and importance of questioning particularly in a mathematics course. It coincides with the philosophy of constructivist education. Active participation of a learning individual, how they interact with what is being learned and use questioning to make meaning of the information are important elements for the realization of learning (Aguiar, Mortimer, & Scott, 2010; Doğan, 2018).

About half of the students stated that they refrained from asking their teachers questions. Indeed, above-moderate scores from the *anxiety about questioning* subscale of ASTAQ reinforce this result. While students have so many questions, they usually do not ask them (Good et al., 1987). Dillon (1981) explained the reasons why students do not ask their questions to be the fact that their questions may not be clear or they think their questions are not important enough to be asked, and they are prevented from asking their questions and afraid of asking questions. Aslan (1994) articulated that individuals are afraid both of being asked and asking questions throughout their academic lives. For children, the questioning period starts with the age of 2-3 and peaks at the age of 6 which is the primary school age. In other words, students start their school lives as having been motivated to ask questions (Aslan, 1994). Yet, as they grow up, they start to ask fewer questions (Singh, Shaikh, & Haydock, 2019). Unfortunately, children's insatiable desire to question at early ages are suppressed and turned into fear for several reasons (Aslan, 1994). Like in the literature, it was found in this study that the participants refrained from asking questions due to *frustration* and *fear*. Regarding one of the reasons, *frustration*, the most emphasized justifications were that 'teacher is busy or delays answering the question' and that 'student does not want to interrupt the course'. Dillon (1981) stated that students are usually afraid of asking questions and frustrate themselves due to negative reactions of teachers

and other students. In this study, within the scope of the theme of *fear*, the most highlighted justifications provided by the students were that 'teacher finds the question unnecessary or simple' and 'thinking that the friends will not understand it'. Along with these justifications, factors such as the fact that teacher gets mad, others mock the question, peers think that students can be easily answered; embarrassment; thinking that friends do not understand the question, thinking that he/she asked a wrong or unimportant question and thinking that he/she will disgrace himself/herself represent hindrance for student questioning. There are studies in the literature which coincide with these results (Chin & Osborne 2008; Dillon, 1981, 2004; Doğan, 2018; Good et al., 1987; Madhu, 2015; Singh, 2019).

As for how students asked their friends questions, it was observed that the students tended to ask their friends more questions with higher grade levels. Justifications of students who asked their peers questions in this study were categorized in two themes which are not being able to ask the teacher question and learning from a peer, and some of the students stated that they did not refrain from their peers but the teacher and could ask them questions more easily because they were not afraid of them. Considering the students' views on why they did not ask their friends questions, three themes were derived, which are not trusting the peer, being shy of peer and teacher's negative reaction. The reason for this situation may be that students think that when they ask for help, it means revealing themselves as academically incompetent. As a matter of fact, it is stated in the literature that the more a student sees seeking help as a sign of weakness, the less likely he is to seek help (Karabenick & Gonida, 2018; Micari & Calkins, 2021). These results coincide with the results achieved by Madhu (2015).

One of the factors that affect student questions is their experiences (Almeida, 2012; Dillon 1981). In this study, the studies were asked to write down anecdotes to explore their questioning experiences, and the analyses notably showed that most of the anecdotes were about negative experiences. Indeed, regarding the reasons why the students did not ask questions, the negative effect of previous questioning experiences and students' above-moderate scores from the *anxiety about questioning* subscale of ASTAQ reinforce this result. In line with the results obtained, one can argue that one of the reasons why most of the students did not ask questions was experiences in their previous academic lives, which would most likely blunt their questioning behaviors. These results coincide with the results obtained by Dillon (1981) and Madhu (2015). Another conclusion from the anecdotes is that the students had several feelings such as happiness, fear, refrainment, anxiety, and excitement at the same time when asking questions. Thus, in consideration of this situation, it is important for teachers to create environments where students will feel safe about asking questions (Aguiar, Mortimer & Scott, 2010).

Student questions not only assist their learning but also improve creativity and motivate students to participate in classroom activities. Student questions can reveal several aspects of student thinking and comprehension. Some questions suggest that students think of the given concepts and opinions or try to relate them to other concepts they already know about (Chin & Osborne, 2008; Marbach Ad & Sokolove, 2000; Watts et al., 1997). Student questions inform teachers about topics for which students have difficulty in learning and also provide useful feedback for planning their future teaching (Chin, 2001). Furthermore, they help teachers ensure reflective thinking and student participation (Almeida, & Neri de Souza, 2010; Chin & Osborne, 2008; Doğan, 2018). In this study, teacher perceptions of and attitudes toward student questioning were examined, as well. As for the teacher views on the importance of student questioning, it was observed that the teachers developed several skills in parallel with the literature and contributed to the learning-teaching process. As inferred from the teacher views on the purpose of student questions, they believed that the students asked questions *for learning* but also *for hindering the course*. The teachers argued that the greatest reason why students did not ask them questions was the teachers themselves, students were *afraid of* and *refrained from* asking them

questions, which is another remarkable result of the study. However, this result contradicts the teachers' statements that their students could ask them questions conveniently. In addition, teacher behaviors that prevented students from asking them questions have similarities with the students' views.

In summary, it was found in the study that the students were anxious above moderate levels according to the results from the *anxiety about questioning* subscale of ASTAQ although they had high levels of questioning attitudes. It was also concluded that the number of questions asked by the students increased with higher grade levels, but they asked questions less frequently. In addition, about half of the students refrained from asking their teachers questions, which was due to *frustration* and *fear*. In parallel with the study by Dillon (1981), the greatest fear stated by the students was mathematics teacher's negative reaction rather than classmates' reactions. As for how students asked their friends questions, it was observed that the students tended to ask their friends more questions with higher grade levels. Considering both teacher and student views together, teacher behaviors that prevented questioning had similarities. Based on these results, teacher behaviors that hinder and support questioning can be observed in the classroom setting to take precautions. Teachers should implement activities that will enable students to question and work with their peers and exhibit behaviors which will support their questioning. Once appropriate learning environments where teachers attach importance to student thoughts, opinions and perspectives have been created to encourage students' questioning behaviors, student questions have been observed to be highly more cognitive (Edwards & Bowman, 1996; Marbach Ad & Sokolove, 2000) and better, meaningful and scientifically sounder (Hofstein et al., 2005). Hence, for eliminating the fear and frustration in terms of questioning in mathematics courses, students need to be provided with an educational environment where they feel comfortable, and teachers and peers should not exhibit judgmental and sarcastic attitudes and behaviors. Moreover, teachers can include students' questioning behaviors in the assessment criteria to support their questioning.

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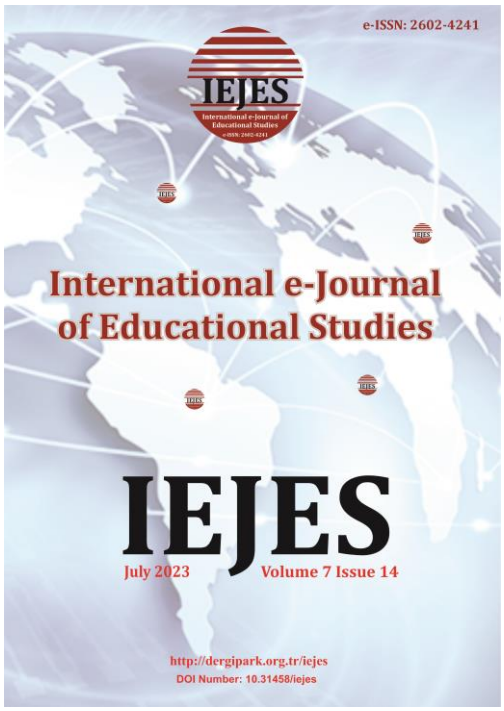

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Abstract

This research was conducted to examine the socially responsible leadership (SRL) perceptions of university students, which are thought to be directly related to social developments. The survey method, one of the quantitative research methods, was used in the study. The sample consisted of 73 female and 134 male (Age Mean: 22.19±3.307) students studying at the faculty of sports sciences. The "Socially Responsible Leadership Scale-SRL" developed by Tyree (1998) and adapted to Turkish by Külekçi and Özgan (2015) was used as a measurement tool. Descriptive statistics, t-test, and ANOVA were used in the analysis. It was found that students' SRL perception was high. While the variables of gender, grade level, and taking social service course showed statistically significant differences, no statistically significant differences were found between other variables and sub-factors. It has been determined that as the age and grade level increase and the status of doing sports is positive, students' perception of socially responsible leadership also increases. The results obtained in this research reveal the importance of education and sports. The fact that the courses given on socially responsible awareness in universities, the number of projects, and the positive situation of individuals doing sports make us think that university students are also effective in increasing their perception of socially responsible leadership, and it is expected that the research will contribute to socially responsible leadership studies in the field of sports sciences.

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Research Article

Sport Sciences Students' Socially Responsible Leadership Perceptions*

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Abstract

This research was conducted to examine the socially responsible leadership (SRL) perceptions of university students, which are thought to be directly related to social developments. The survey method, one of the quantitative research methods, was used in the study. The sample consisted of 73 female and 134 male (Age Mean: 22.19±3.307) students studying at the faculty of sports sciences. The "Socially Responsible Leadership Scale-SRL" developed by Tyree (1998) and adapted to Turkish by Külekçi and Özgan (2015) was used as a measurement tool. Descriptive statistics, t-test, and ANOVA were used in the analysis. It was found that students' SRL perception was high. While the variables of gender, grade level, and taking social service course showed statistically significant differences, no statistically significant differences were found between other variables and sub-factors. It has been determined that as the age and grade level increase and the status of doing sports is positive, students' perception of socially responsible leadership also increases. The results obtained in this research reveal the importance of education and sports. The fact that the courses given on socially responsible awareness in universities, the number of projects, and the positive situation of individuals doing sports make us think that university students are also effective in increasing their perception of socially responsible leadership, and it is expected that the research will contribute to socially responsible leadership studies in the field of sports sciences.

Keywords: Social responsibility, leadership, education, sport, student

1. INTRODUCTION

With the development of technology and science, the speed of access to information, knowledge levels, perspectives, socio-cultural values and education levels of people are changing rapidly. It can be said that the definitions, concepts and theories related to leadership progress and develop in parallel with these changes. It is known that leadership theories follow each other as Great Man Theory, Trait Theories, Behavioral Theories, Contingency Theories, Modern/Contemporary approaches to leadership and then Neo-Charismatic Theories. In parallel with this historical development, ethical principles, spiritual morality, common goals and social responsibility (Komives & Dugan, 2010) come to the fore in modern leadership approaches, and social change is aimed in the realization of goals (Dugan, 2013). Although the concept of leadership has different definitions in many areas with change, development and progress, in general, leadership can be defined as a person who has the competence to bring a group of people together around a certain goal, to mobilize, direct and influence the group for this purpose (Robbins & Judge, 2013). In this direction, the mutual interaction that forms the basis of leadership also brings with it a sense of responsibility. Mutual interaction, which is an important factor in the individual's becoming a social being, can be associated with social

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responsibility awareness by the individual adopting his responsibility in the society depending on the characteristics of the society he lives in, his social and cultural structure and his personal contribution to the development of the society (Erol, 2000). Although the individual is responsible for his/her behaviors in society, the individual should be aware of social responsibility in a livable and healthy society (Hotamışlı, Çağ, Menteşe & Yörük, 2010).

Leadership, when the acceptance and undertaking of the effects and results within a work, event or decision made is defined as the concept of responsibility (Glover, 1970); is to bear the responsibility of a person, a purpose, a group along with the responsibility of their own actions. When we look at it in this context, we come across socially responsible leadership. The social change model of leadership development (HERI, 1996) was created specifically for university students and is compatible with the emerging leadership paradigm (Dugan, 2006). Although the Social Change Model is a model that addresses the responsibilities of the individual for the development of social benefit by focusing on change (Wagner, 2009), socially responsible leadership is defined as a type of leadership that is based on the awareness of the individual, considers society as a whole and includes the sense of responsibility, goals, values, creating change and cooperation for social benefit and prosperity (Komives & Dugan, 2010; Wagner, Ostick, & Komives, 2010; Watt, 2009). Socially responsible leadership is change-oriented, and there are three levels as individual, group and social values as a leadership development process.

Universities, which are an institution where universal knowledge is produced and managed, are also institutions that aim to raise individuals who are a whole of the society in which they are located, who are directly involved in the change and development of society, but who research, produce, develop, innovate, question, examine and have a sense of social responsibility (Kuzucu & Kamer, 2009). Universities, which are an inseparable part of societies and life, ensure that responsible individuals who aim to contribute to the society and give direction, raise awareness in the direction of service to the society, produce projects and play an active role in social changes. Considering this effect of universities on society and individuals, Külekçi (2016) also states that leadership skills should be developed by strengthening students' knowledge, experience and competencies by ensuring that students participate in social responsibility studies at all stages of university education.

When the studies on the socially responsible leadership perceptions of university students are examined, there is doctoral research conducted by Tyree (1998). In this first study, leadership's social change model was evaluated in 104 items and 8 sub-scales. In the studies conducted in the following years, it was observed that the scale items were reduced and different researchers focused on examining the socially responsible leadership capacities of university students (Barnes, 2014; Dugan, 2015; Dugan & Komives, 2010). On the other hand, the scarcity of studies in Turkey draws attention. It was initiated by Külekçi (2015) as doctoral research, and then the “Socially Responsible Leadership Scale” (Külekçi & Özgan, 2015) was translated into Turkish as an article.

Considering that the studies on university students, who are thought to have direct relations with social developments, have a significant impact, this study aimed to examine the socially responsible leadership perceptions of Pamukkale University Faculty of Sport Sciences students. For this purpose, it was aimed to examine whether the scores obtained from the sub-scales of the SRLS show a statistically significant difference according to gender, age groups, place of residence before coming to university, grade levels, department of education, taking on social service course, member in student societies, regular sports status and licensed sports status.

2. METHOD

2.1. Research Method

In this research, source documents were examined, and comparison type relational survey model, one of the quantitative research methods, was used (Karasar, 2012). Study data were collected from the students who voluntarily participated in the research in the fall semester of the 2020-2021 academic year, using the survey technique.

2.2. Research Group

The universe of the research consists of 490 students studying at Pamukkale University Faculty of Sport Sciences. From this universe, 73 female (age=22.05±3.04), 134 male (age=22.26±3.44), totally 207 (age=22.19±3.31) students selected by simple random sampling method based on probability principle, constituted the sample group of the study. In the subgroups (gender, age, department, etc.) in which the sample was divided, care was taken to ensure that the sample size of each category was at least 30. In terms of the place where they lived before coming to the university, it was reported that 7.2% of the students lived in the village, 23.2% in the district, 21.7% in the province and 47.3% in the metropolitan city. According to the grade level, 30.4% of the students are in the first grade, 19.3% are in the second grade, 21.7% are in the third grade and 28.5% are in the fourth grade. Distribution of students according to departments; Physical Education and Sports Teaching 19.8%, Coaching Education 16.9%, Recreation 9.7% and Sports Management 53.6%. Considering whether or not they took the "social service course", 71% of the students answered “yes” and 29% answered “no”. According to the status of being a member of student societies, 29.5% of the students marked "yes" and 70.5% marked "no". 62.3% of the students stated that they did sports regularly, while 37.7% stated that they did not do sports regularly. 71.5% of the students stated that they did sports under license, while 28.5% stated that they did not do sports under license.

2.3. Data Collection Tool

In the research, a “Personal Information Form” was created to determine the gender, age, place of residence, grade level, department of study, community service course, being a member of student societies, doing regular sports and doing sports as licensed. The “Socially Responsible Leadership Scale” (SRLS) developed by Tyree (1998) and adapted to Turkish by Külekçi and Özgan (2015) were used as measurement tools. The scale consists of 60 items and 8 sub-scales of the 5-point Likert type, graded between “strongly disagree-1” and “strongly agree-5”. The total scores obtained from the scale are evaluated as “low”, “medium” and “high”. Item numbers of sub-scales; “consciousness of self” 8, “congruence” 7, “commitment” 6, “collaboration” 8, “common purpose” 9, “controversy with civility” 6, “citizenship” 8, and “change” 8. In the Turkish version, the Cronbach alpha values of the subscales of the SRLS were .82 for “consciousness of self”, .82 for “congruence”, .83 for “commitment”, .77 for “collaboration”, .83 for “common purpose”, .69 for “controversy with civility”, .92 for “citizenship”, and .78 for “change”.

2.4. Procedure

After obtaining approval from the relevant Ethics Committee of the university where the researchers are affiliated, permission was obtained from the Dean of the Faculty of Sport Sciences to collect the data. The number of students enrolled in the faculty in the 2020-2021 academic year has been determined. The data collection phase was carried out in the classroom environment and by informing the students who participated voluntarily. Response time for the data took an average of 25 minutes. The scale forms collected from the students were coded to be processed into the analysis program.

2.5. Data Analysis

SPSS 26 statistical program was used for the analysis of the data. Descriptive statistics of the obtained data were made and z test was applied to measure whether the data showed normal distribution. Samples independent of binary comparison tests t-test and One-Way Analysis of Variance (ANOVA) test from multiple comparison tests were applied to the groups found to show normal distribution, and Post Hoc (Tukey) test was applied to determine which group the results originated from in case of difference between the groups. Whether the variances were homogeneously distributed or not was examined by the Levene Test, and it was determined that they were homogeneously distributed. The findings were tested at a 95% confidence interval and a .05 significance level.

3. FINDINGS

The results obtained from the participants by using the Socially Responsible Leadership Scale (SRLS) are given in tables.

Table 1. Descriptive statistics, normality test values, and Cronbach Alpha values *(n=207)*

SRLS Sub-scales	Item n	Scores			SD	Skewness	Kurtosis	Cronbach Alpha
		Mean	Min.	Max.				
SRLS Total Score	60	269.44	177	300	24.651	-.924	.357	.96
Consciousness of Self	8	35.14	23	40	4.128	-.674	-.159	.77
Congruence	7	31.60	20	35	3.434	-.828	-.070	.83
Commitment	6	27.48	17	30	2.774	-1.181	1.107	.78
Collaboration	8	35.94	23	40	3.752	-.963	.384	.80
Common Purpose	9	41.10	26	45	4.132	-1.041	.420	.87
Controversy with Civility	6	27.23	17	30	2.975	-1.192	1.042	.67
Citizenship	8	35.69	22	40	4.132	-.847	-.136	.83
Change	8	35.25	24	40	3.753	-.620	-.293	.72

Since the Skewness and Kurtosis values were in the range of ± 1.5 (Tabachnick & Fidell, 2013), the data were assumed to be normally distributed. When the Cronbach Alpha values are examined, it is seen that it is between .67 and .87. According to Alpar (2010), the confidence interval values of the scales are "high" between 1.00-.80, "quite reliable" between .79-.60 and "low" between .59-.40. Considering these value ranges, the data tool can be considered reliable for this research.

Table 2. t-test results by gender

SRLS Sub-scales	Female *(n=73)*		Male *(n=134)*			
	M	*SD*	*M*	*SD*	*t*	p
Consciousness of Self	34.73	4.432	35.37	3.950	1.078	.282
Congruence	31.15	3.946	31.85	3.108	1.405	.162
Commitment	27.05	3.287	27.71	2.434	1.627	.105
Collaboration	35.22	4.063	36.34	3.524	2.062	.040*
Common Purpose	40.64	4.224	41.35	4.075	1.177	.240
Controversy with Civility	26.89	3.129	27.42	2.882	1.220	.224
Citizenship	35.12	4.469	35.99	3.919	1.450	.149
Change	34.51	4.096	35.66	3.501	2.124	.035*

*p<.05

The scores of the students from the "collaboration" and "change" sub-scales of the Socially Responsible Leadership Scale show a statistically significant difference according to the gender variable.

Table 3. ANOVA results according to age groups

SRLS	18-20 ages (n=69)		21-23 ages (n=90)		24 age and older (n=48)				
Sub-scales	***M***	***SD***	***M***	***SD***	***M***	***SD***	**F**	**p**	**Effect size**
Consciousness of Self	35.36	3.967	34.58	4.203	35.90	4.147	1.752	.176	.017
Congruence	31.09	3.551	31.73	3.556	32.10	2.970	1.360	.259	.013
Commitment	27.04	2.987	27.49	2.900	28.08	2.061	2.009	.137	.019
Collaboration	35.23	4.033	36.22	3.693	36.44	3.345	1.923	.149	.019
Common Purpose	40.58	4.347	41.28	4.154	41.52	3.764	.878	.417	.009
Controversy with Civility	27.42	2.403	27.02	3.215	27.35	3.271	.400	.671	.004
Citizenship	35.09	4.375	35.88	4.016	36.19	3.966	1.178	.310	.011
Change	35.10	3.978	35.02	3.721	35.90	3.472	.930	.396	.009

There was no statistically significant difference between the scores of the students in the sub-scales of the Socially Responsible Leadership scale according to age groups. In addition, when the effect sizes were examined, it was determined that the variance in the dependent variable could be explained by the difference between the groups of the independent variable at very low levels.

Table 4. ANOVA test results according to place of residence before coming to university

SRLS	Village (n=15)		District (n=48)		City (n=46)		Metropolis (n=98)				Effect size
Sub-scales	***M***	***SD***	***M***	***SD***	***M***	***SD***	***M***	***SD***	**F**	**p**	
Consciousness of Self	34.53	4.868	35.71	4.032	34.41	4.047	35.31	4.098	.939	.423	.014
Congruence	31.53	3.944	31.50	3.632	31.28	2.994	31.82	3.486	.273	.845	.004
Commitment	26.73	3.348	27.90	2.668	26.78	2.529	27.71	2.803	1.950	.123	.028
Collaboration	35.93	4.367	35.67	4.304	35.54	3.305	36.27	3.589	.498	.684	.007
Common Purpose	41.07	5.189	41.08	4.326	40.39	3.780	41.45	4.039	.682	.564	.010
Controversy with Civility	27.67	3.177	27.42	3.024	26.72	3.082	27.32	2.885	.650	.584	.010
Citizenship	34.73	4.636	35.44	4.079	34.89	4.260	36.33	3.974	1.693	.170	.024
Change	35.87	4.549	35.06	4.071	34.67	3.354	35.52	3.656	.703	.551	.010

The scores of the students in the SRLS sub-scales do not show a statistically significant difference according to the variable of the place where they lived before coming to the university. In addition, when the effect sizes were examined, it was determined that the variance in the dependent variables could be explained by the difference between the groups of the independent variable at very low levels. The impact level was found to be 2.8% in the "commitment" sub-scale, and 2.4% in the "citizenship" sub-scale.

Table 5. ANOVA results according to grade level

SRLS	Grade 1 (n=63)		Grade 2 (n=40)		Grade 3 (n=45)		Grade 4 (n=59)					Effect size
Sub-scales	***M***	***SD***	***M***	***SD***	***M***	***SD***	***M***	***SD***	**F**	**p**	**MD**	
Consciousness of Self	34.00	4.143	35.63	4.180	35.60	4.158	35.69	3.905	2.374	.071		.034
Congruence	30.73	3.539	31.73	3.351	31.96	3.119	32.19	3.506	2.134	.097		.031
Commitment	26.71	2.921	27.53	3.004	28.33	1.931	27.61	2.847	3.162	.026*	1< 3	.045
Collaboration	34.81	4.040	35.85	3.556	36.71	3.231	36.63	3.713	3.316	.021*	1< 3, 4	.047
Common Purpose	40.13	4.148	41.50	4.108	41.87	3.328	41.29	4.568	1.870	.136		.027
Controversy with Civility	27.08	2.903	27.70	2.691	27.89	2.470	26.58	3.460	2.106	.101		.030
Citizenship	34.73	4.209	35.48	4.025	36.64	3.379	36.12	4.496	2.220	.087		.032
Change	34.49	3.852	35.48	3.515	36.22	3.771	35.17	3.696	1.947	.123		.028

*p<.05

The scores of sports science students in the "commitment" and "collaboration" sub-scales of the Socially Responsible Leadership scale show a statistically significant difference according to their grade level. In addition, when the effect sizes were examined, it was determined that the variance in the dependent variables could be explained by the difference between the groups of the class variable at the level of 3%.

Table 6. ANOVA results according to department

SRLS	PES (n=41)		C (n=35)		REC (n=20)		SM (n=111)				Effect size
Sub-scales	***M***	***SD***	***M***	***SD***	***M***	***SD***	***M***	***SD***	***F***	***p***	
Consciousness of Self	34.46	4.075	34.54	4.835	36.10	3.712	35.41	3.967	1.138	.335	.017
Congruence	31.46	3.494	31.49	3.338	32.40	3.939	31.55	3.376	.401	.753	.006
Commitment	27.39	2.587	27.71	2.468	26.95	3.591	27.53	2.792	.350	.789	.005
Collaboration	36.10	3.800	36.06	3.253	35.70	4.207	35.89	3.841	.068	.977	.001
Common Purpose	40.78	3.940	41.66	3.895	41.55	4.707	40.96	4.197	.409	.746	.006
Controversy with Civility	26.76	3.145	27.26	2.974	26.80	2.628	27.48	2.978	.740	.529	.011
Citizenship	35.37	3.961	36.03	4.091	36.00	4.449	35.64	4.193	.203	.894	.003
Change	34.59	3.681	35.51	3.442	34.35	4.107	35.58	3.798	1.153	.329	.017

PES: Physical Education and Sport, C: Coaching, REC: Recreation, SY: Sports Management

Students' SRLS sub-scale scores do not show a statistically significant difference according to the variable of the department they are studying. When the effect sizes were examined, it was determined that the variance in the dependent variables could be explained by the difference between the groups of the quotient variable at very low levels.

Table 7. t-test results according to social service course

SRLS	Yes (n=147)		No (n=60)			
Sub-scales	***M***	***SD***	***M***	***SD***	***t***	**p**
Consciousness of Self	35.46	3.822	34.37	4.741	1.742	.083
Congruence	31.82	3.319	31.08	3.679	1.396	.164
Commitment	27.67	2.604	27.00	3.125	1.590	.113
Collaboration	36.21	3.685	35.28	3.862	1.620	.107

Common Purpose	41.29	3.955	40.65	4.539	1.004	.316
Controversy with Civility	27.42	2.963	26.77	2.977	1.441	.151
Citizenship	35.93	4.041	35.10	4.325	1.306	.193
Change	35.60	3.719	34.40	3.729	2.102	.037*

*p<.05

A statistically significant difference was found in the scores of the students in the Socially Responsible Leadership Scale "change" sub-scale, according to the variable of taking on social service course, but no statistically significant difference was found for the other sub-scales.

Table 8. t -test results according to membership in student societies

SRLS	**Member** *(n=61)*		**Not a member** *(n=146)*			
Sub-scales	***M***	***SD***	***M***	***SD***	***t***	**p**
Consciousness of Self	34.90	4.053	35.25	4.168	.547	.585
Congruence	31.75	2.970	31.54	3.618	.406	.685
Commitment	27.59	2.411	27.43	2.919	.374	.709
Collaboration	36.51	3.218	35.71	3.939	1.407	.161
Common Purpose	41.44	3.599	40.96	4.339	.767	.444
Controversy with Civility	27.28	2.835	27.21	3.040	.146	.884
Citizenship	35.90	4.053	35.60	4.175	.484	.629
Change	35.56	3.299	35.12	3.930	.758	.449

There was no statistically significant difference between the scores obtained from the sub-scales of SRLS according to the status of being a member of student societies.

Table 9. t-test results according to regular sports status

SRLS	Yes *(n=129)*		**No** *(n=78)*			
Sub-scales	***M***	***SD***	***M***	***SD***	***t***	**p**
Consciousness of Self	35.19	4.062	35.08	4.260	.184	.854
Congruence	31.32	3.453	32.08	3.372	1.546	.124
Commitment	27.53	2.687	27.38	2.929	.377	.707
Collaboration	36.02	3.440	35.81	4.237	.400	.690
Common Purpose	40.95	4.151	41.35	4.115	.662	.509
Controversy with Civility	27.39	2.840	26.97	3.187	.968	.334
Citizenship	35.61	4.243	35.81	3.964	.329	.743
Change	35.40	3.633	35.00	3.954	.748	.455

It was found that the scores of the students from the sub-scales of the Socially Responsible Leadership Scale did not show a statistically significant difference according to the regular sports variable.

Table 10. t-test results according to licensed sports status

SRLS	**Yes** *(n=148)*		**No** *(n=59)*			
Sub-scales	***M***	***SD***	***M***	***SD***	***t***	**p**
Consciousness of Self	35.29	4.065	34.78	4.295	.803	.423
Congruence	31.84	3.276	31.00	3.765	1.603	.110
Commitment	27.62	2.522	27.12	3.322	1.179	.240
Collaboration	36.11	3.455	35.53	4.415	1.009	.314
Common Purpose	41.31	4.023	40.58	4.383	1.156	.249
Controversy with Civility	27.30	2.732	27.07	3.532	.500	.617
Citizenship	35.75	4.015	35.53	4.443	.352	.725

Change	35.36	3.616	34.97	4.094	.689	.491

It was found that the scores of the students from the sub-scales of the SRLS did not show a statistically significant difference according to the licensed sports variable.

4. DISCUSSION and CONCLUSION

In the study, the socially responsible leadership perceptions of the students of the Faculty of Sports Sciences were examined according to the variables of gender, age, place of residence, grade level, department, taking social service courses, membership in student societies, doing regular sports and doing licensed sports. Considering the minimum and maximum scores of the sub-scales of SRLS, it was found that the students had a perception of socially responsible leadership above the average. In a study conducted by Külekçi (2015) on university students, it was found that the post-test score averages were 262 for the experimental group, 279 for the control group, and the pre-test scores for these two groups were close to each other, and it was determined that the students' SRLS perceptions increased because of the training provided. In this study, the average score of the students who received sports training was determined as 269. Therefore, it can be said that university students' perceptions of leadership based on social responsibility are close to each other.

When the gender variable was examined, a statistically significant difference was found in the scores of male and female students receiving sports training from the “collaboration” and “change” subscales of the socially responsible leadership scale. It was determined that male students had higher scores than female students in all sub-scales. Similarly, in the study conducted by Dugan, Komives and Segar (2008), male participants scored higher in the “change” sub-scale, while female participants scored higher in other sub-scales. Özgan and Öztuzcu’s (2016) study found that male teachers' perceptions of socially responsible leadership were higher than female teachers in the “congruence” and “collaboration” sub-scales. When other studies were examined, it was determined that female participants had higher perceptions of socially responsible leadership than male participants and that there were significant differences in sub-scales (Anderson, 2012; Dugan, 2006). In the study conducted by Haber and Komives (2009), it was determined that female participants scored higher on the “consciousness of self”, “responsibility” and “congruence” sub-scales. In Buschlen and Johnson’s (2014) study, it was observed that although female participants received higher scores in the “citizenship” sub-scale, the scores of male participants increased because of the training. The reason for the different results in terms of gender in the studies may be due to the education levels of the students, different education programs, having different cultures, and even the developing and changing world and opportunities with the year the research was conducted. Since students in sports sciences were examined in this study, the fact that there is a male-dominated sports culture stemming from our culture may be a factor in the higher scores of male students. As a matter of fact, male students achieved higher socially responsible leadership scores than female students on the “collaboration” and “change” sub-scales.

No statistically significant difference was found between the scores of the participants from the sub-scales of the socially responsible leadership scale according to age groups. In terms of age groups, the existence of findings supporting this result draws attention in the literature. In studies in which university students (Buschlen & Johnson, 2014; Külekçi, 2015) and teachers (Özgan & Öztuzcu, 2016) were examined, it was stated that the perception of socially responsible leadership did not differ significantly in terms of age groups. The studies examined in the literature support the results of this study, and it can be said that the age variable is not a determining factor in the perception of socially responsible leadership. However, in this study and related studies, it has been determined that students' perceptions of socially responsible leadership increase in almost all sub-scales as age increases. This may be due to the age factor gaining experience with the progression of time, receiving different

trainings in every field, increasing the sense of responsibility and social relations, developing the ability to congruence, and experiencing change by experiencing more collaboration and common purpose factors. It was found that there was no statistically significant difference between the variable of place where the students lived before coming to university and the SRLS subscale scores. In other words, the fact that students studying in sports sciences live in villages, districts, provinces, and metropolises is not a determining factor in the perception of socially responsible leadership. On the other hand, when the mean scores are examined, the students living in metropolitan cities "congruence", "collaboration", "common purpose" and "citizenship", the students living in the district "commitment" and "consciousness of self ", and the students living in the village "controversy with civility" and "change" sub-scales were found to have higher mean scores. Similarly, in Külekçi's (2015) study, a significant difference was found only in the "collaboration" sub-scale with the place of residence variable, and it was reported that students living in metropolitan cities scored higher. In the light of this information, the higher perceptions of socially responsible leadership of students who lived in metropolitan cities before they started their university education may be due to the wider educational opportunities of the students, the population density, the richness of the social and cultural structure, and the more opportunities to participate in activities or projects related to social responsibility.

The scores of the "congruence" and "collaboration" sub-scales of sports science students show a statistically significant difference according to the grade level variable. In the "congruence" sub-scale, the mean scores of 3rd graders (*M*=28.33) were higher than 1st graders (*M*=26.71), and on the "collaboration" sub-scale, 3rd graders (*M*=36.71) and 4th graders (*M*= 36.63) scores were found to be higher than the scores of 1st graders (*M*=34.81). When the studies are examined, it is seen that there are results that support the results obtained in this study. When the studies were examined, it was seen that the findings obtained in this study were supported. In Külekçi's (2015) study, a statistically significant difference was found only in the "collaboration" subscale, and grade 3 students' SRLS perceptions (*M*=32.77) were higher than grade 1 and grade 2 students. In the light of this information, the increase in the courses and projects related to social responsibility at universities as the grade level increases may be effective in the increase in the perception of socially responsible leadership of university students.

In terms of the department variable, the research findings show that there is no statistically significant difference in the socially responsible leadership perceptions of sports science students. However, when the scores of the students were examined according to the departments, it was determined that higher scores were obtained in the sub-scales; Physical Education and Sports "collaboration", Coaching Education "commitment", "common purpose" and "citizenship", Recreation "consciousness of self" and "congruence", and Sports Management "controversy with civility" and "change". The reason for obtaining different findings according to departments may be because there are different curricula in the departments and the courses are given by different instructors. Therefore, although it has been determined that the department variable is not a determining factor for this research, it is a situation that will be supported by the increase in studies to be done in the field.

A statistically significant difference was found only in the "change" sub-scale in the socially responsible leadership perceptions of university students according to their Social Service Course (SSC). When the mean scores were examined, it was determined that the students who took SSC had higher SRLS perceptions in all subscales than the students who did not take the course. When the curricula of the departments (PES: Physical Education and Sport, C: Coaching, REC: Recreation, SY: Sports Management) in the Faculty of Sport Sciences, where the research was carried out, are examined, it is seen that "community service practices", "volunteering in sports", "organization management", "group dynamics and leadership", "leadership and sports" etc. It has been determined

that such courses are included and the content is processed as project-based applied trainings (PAÜ, 2022). Therefore, the fact that the scores of students who took similar courses on social responsibility and leadership were higher than those who did not receive them was supported by this research. On the other hand, although there is no statistically significant difference in other sub-scales, except for the "change" sub-scale, it can be said that the status of taking SSC course contributes to the development of students' perception of socially responsible leadership. Saran, Coşkun, İnal Zorel and Aksoy (2011) also stated that students taking THU courses offers the opportunity to develop their skills to serve the community throughout their university education and when they graduate. These findings, which were also obtained in this research conducted on sports science students, once again emphasize the contribution and importance of education on students.

According to the variable of membership in student societies, there was no statistical difference in students' perceptions of socially responsible leadership. However, it was determined that the average scores of the students who were members of the communities were high in all except the "consciousness of self" dimension. Similarly, in studies conducted, Hotamışlı et al. (2010) found that taking an active role in student societies did not make a difference in students' perception of socially responsible, and Külekçi and Özgan (2015) found that students who were members of communities had higher perception of SRL. Since only the status of being a member is determined in the variable of being a member of student societies, the interaction of the communities, the number of activities and the impact on the student etc. such cases could not be controlled. Therefore, these factors should be taken into consideration in more in-depth research and the impact of membership in communities on social responsibility should be determined. As research increases, it can be revealed whether this variable is also a consistent variable.

There was no statistically significant difference in the perception of SRL according to the variables of "regular sports" and "licensed sports" of students studying in sports sciences. However, the mean scores of students who played regular and licensed sports were higher than those who did not play sports. It can be said that this situation is due to the fact that the entire research sample consists of sports science students. When sports are examined as a variable in the studies to be carried out with students who do not receive sports education, it can be revealed more clearly whether doing sports is an effective factor or not. Because, according to Şahan (2008), with sports activities, the individual provides solidarity and sharing with the feeling of winning and losing, and the development of a sense of social responsibility in this direction.

According to the results of the research, it was determined that gender, grade level and taking on social service course were a determining factor, while age groups, place of residence, department, membership in student societies, regular sports and licensed sports were not a factor in students' SRL perceptions. The gender of the students is a determining factor in the "collaboration" and "change" sub-scales in the perception of socially responsible leadership, and the scores of male students are higher than female students. The "collaboration" and "commitment" sub-scales in the grade level variable, and the "change" sub-scale in the social service practices course-taking variable made a significant difference. It has been determined that the perception of socially responsible leadership increases as the age and class level of students, and students living in metropolitan cities in terms of where they live before they come to the university. Similarly, socially responsible leadership perceptions of students who are members of student societies and who do sports were found to be high.

The results obtained in this research reveal the importance of education and sports. The fact that the courses given on social responsibility awareness in universities, the number of projects and the positive situation of individuals doing sports make one think that university students are also effective in increasing their perception of socially responsible leadership, and it is expected that the research will contribute to socially responsible leadership studies in the field of sports sciences.

This research is limited to the answers given by the students who continue their education at Pamukkale University Faculty of Sport Sciences in the fall semester of the 2020-2021 academic year, but who continue to school. However, the fact that the authors did not give permission for the adaptation of the short form of the original scale to Turkish at the beginning of the study was also a limitation. Finally, it is thought that making some suggestions within the scope of the research will be beneficial for future research. Considering that social responsibility is important in leadership development, the relationship between leadership and social responsibility can be investigated in sports-related fields. By reaching larger samples, studies and trainings on social responsibility and leadership development in sports can be carried out. Qualitative, quantitative and mixed research can be done on sports, social responsibility and leadership.

Ethics Committee Decision

For the research, the permission of the ethics committee was obtained with the decision of Pamukkale University Social Sciences Research and Humanities Research and Publication Ethics Committee dated 02.06.2021 and numbered 10-1 meeting/decision numbered 68282350/22021/G10.

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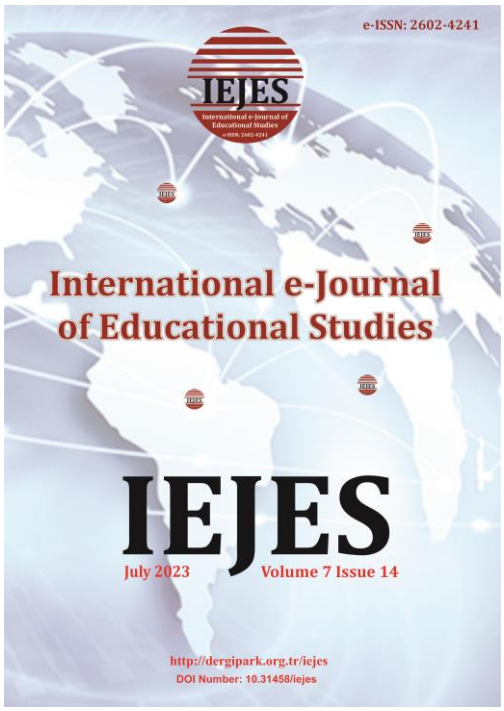

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Abstract

The changing needs of the student in present contemporary times do require the progress and development of the teacher competencies. Should the competencies of the teacher not develop; certain problems will be faced such as not being able to meet the needs of the society as well as not reaching the intended student-learner quality. Therefore, teachers need to have the competence to use today's information and communication technologies effectively and efficiently. From this point of view, the aim of this study is to reveal the technology integration self-efficacy perceptions of the Education Faculty members. The study universe of the research consists of 207 instructors teaching at the faculty of education in 2022-2023. Within the scope of the research, the general survey model, applicable as one of the quantitative research methods, has been used. The Technology Integration Self-Efficacy Perception scale, which had been adapted into Turkish by Ünal and Teker (2018), has also been used as the data collection tool. The data obtained in the study then have been analyzed with the SPSS 21.0 program. While determining the effects of gender, age and department variables on technology integration self-efficacy perception, independent sample t-test and one-way analysis of variance (ANOVA) test have been applied. As a result of the study, it is determined that the technology integration self-efficacy perceptions of the instructors working in the Education Faculty have been understood to be high. A significant difference has been spotted in technology integration self-efficacy perception levels among the gender, age and department variables. Accordingly, thus, the study has shown that the male instructors had had a higher technology integration self-efficacy compared to the female instructors. It has also been observed that the self-efficacy perceptions of the 65 years and older faculty members were lower. Finally, it has been determined that the teaching staff of the the Computer and Instructional Technology Teaching Department had higher technology self-efficacy perceptions compared to other departments.

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Research Article

Self-Efficacy Perception of Education Faculty Members on Technology Integration *

Cansu ŞAHİN KÖLEMEN [1]

Abstract

The changing needs of the student in present contemporary times do require the progress and development of the teacher competencies. Should the competencies of the teacher not develop; certain problems will be faced such as not being able to meet the needs of the society as well as not reaching the intended student-learner quality. Therefore, teachers need to have the competence to use today's information and communication technologies effectively and efficiently. From this point of view, the aim of this study is to reveal the technology integration self-efficacy perceptions of the Education Faculty members. The study universe of the research consists of 207 instructors teaching at the faculty of education in 2022-2023. Within the scope of the research, the general survey model, applicable as one of the quantitative research methods, has been used. The Technology Integration Self-Efficacy Perception scale, which had been adapted into Turkish by Ünal and Teker (2018), has also been used as the data collection tool. The data obtained in the study then have been analyzed with the SPSS 21.0 program. While determining the effects of gender, age and department variables on technology integration self-efficacy perception, independent sample t-test and one-way analysis of variance (ANOVA) test have been applied. As a result of the study, it is determined that the technology integration self-efficacy perceptions of the instructors working in the Education Faculty have been understood to be high. A significant difference has been spotted in technology integration self-efficacy perception levels among the gender, age and department variables. Accordingly, thus, the study has shown that the male instructors had had a higher technology integration self-efficacy compared to the female instructors. It has also been observed that the self-efficacy perceptions of the 65 years and older faculty members were lower. Finally, it has been determined that the teaching staff of the the Computer and Instructional Technology Teaching Department had higher technology self-efficacy perceptions compared to other departments.

Keywords: Technology integration, self-efficacy perceptions, educational technology

1. INTRODUCTION

The modern times force us to experience economic and social changes whereas such have been particularly accelerated in 21st century due to the impacts of the technology (Elçiçek & Erdemci, 2021; Genç & Eryaman, 2017). It can be seen that the technology causes economic, social and political consequences on nations (Bacanak, Karamustafaoğlu, & Köse, 2003). In parallel, the educational institutions are expected to recruit competent and equipped individuals by means of technological capabilities (Güneş & Buluç, 2017). In other words, the inevitable digital competency requirements task many responsibilities on the institutions of education. An effective education is now described as a body which can recruit individuals holding modern information and skills whereas able to use the same efficiently and even contribute to the development of the technology (Dinçer, 2003).

The concept of technology integration then affects the components of the educational system (MoNE, 2018). The students and teachers, who are the stakeholders of the technology integration, are also impacted under this interaction (Kaya, 2019). Accordingly, the teachers now shall not be solely

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the transferors of the information; but much more, the individuals who themselves also effectively use the information to guide their students in line with their competencies and interests whereas providing the respective feedbacks all through the education-teaching entire process (Genç & Eryaman, 2017). Any new role acquired by the student throughout the aforementioned process then does play significant roles in the social existence of the respective individual (Günüç, 2017). Aiming to ensure the learners obtain technology awareness starting from the young ages, substantial investments are realized on educational area (Eurydice, 2020). Considering such investments on education which target the mentioned awareness and competencies to be achieved, the students are expected to have the consequent advantages in their future lives (Yenilik ve Eğitim Teknolojileri Genel Müdürlüğü, 2019).

The technology integration process follows the acquiring of the technology awareness and is described as the use technology in conjunction with the conventional learning and teaching strategies while attempting to provide any learning outcome to the student (Ramorola, 2013). The educational technology integration is defined as the technologic tools supporting the process of learning under the aim of overcoming the learning problems through the teaching process (Redmann & Kotrlik, 2004). Thus, in this process of technology integration, the teachers are expected to teach their student how to use the actual technologies and how to make gains from the same (Kent & Giles, 2017). Accordingly, in-service trainings are organized to ensure technology awareness for the teachers and to increase the digital competencies thereof (Öğretmen Yetiştirme ve Geliştirme Genel Müdürlüğü [ÖYGM], 2018). Instructors should plan very effectively how to integrate technology into their education programmes and keep this plan open to continuous change and development. For this reason, lecturers' perceptions of technology integration self-efficacy are important. In other words relates to the fact that the self-efficacy perceptions of the teachers in this area do matter while progressing their technology competencies. The literature does not include many studies related to the self-efficacy issues of the teachers on technology integration. Accordingly, this study is expected to make contribution to the literature by means of the analyzed variables herein. The outcomes of this study may provide certain existing facts in relation with the determination of the technology integration self-efficacy perceptions of the faculty members.

1.1. Conceptual Framework

1.1.1. Technology integration

The technology integration consists of a substantial and systematic process. It includes the examination of preferred technologies envisaged for the lectures as well as the sub-processes of input and outcome evaluations. Accordingly, the technology integration is desired to support the permanent learning objectives. The target of the technology integration process then focuses on the very learning qualities whereas it does not consider the amount or type of the preferred technology but expresses the reason and method of the technology use (Earle, 2002).

The technology integration in education is defined as the learners making utmost use of the new technologies to reach the targets determined in education program and the detailed utilization of the selected technologies throughout the learning process (Ramorola, 2013). In other words, the technology integration process requires the use of the technology to clarify the objectives and learning outcomes for each course or synthesizing the teaching strategies with the technology. In addition to this, ensuring the students to reach the actual sources, achievement of the student-teacher cooperation and updating the existing information are also some of the opportunities provided by the technology integration. To provide such advantages to the student; certain models exist that have been developed for the functionalization of the technology integration. One of such leading models is TPACK (Kaya, 2020).

TPACK model has been designed by Matthew Koehler and Punya Mishra. This model provides a frame of technology, content and pedagogy titles for the teachers. The frame consists of seven areas starting from technology knowledge (TK), pedagogy knowledge (PK) and content knowledge (CK) followed by pedagogy and content knowledge (PCK), technology and pedagogy knowledge (TPK), technology and content knowledge (TCK) and finally technological pedagogical content knowledge (TPACK) which is the intersection of all three main areas. The content knowledge means the general information related to the subject to be taught or learned. This component is included since the teachers need to know the nature of the information and questioning related to the respective subjects of teaching/learning (McGraw-Hill, 2020). This model is demonstrated as Figure 1.

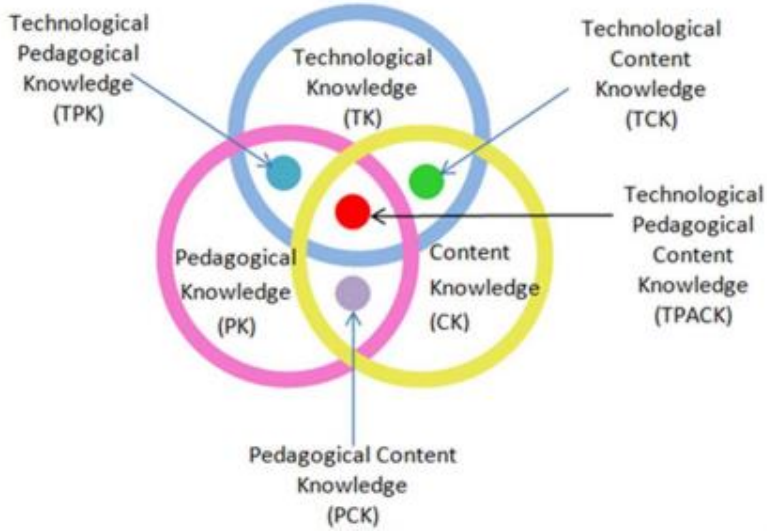

Figure 1. Technological pedagogical area knowledge

The pedagogical knowledge is the diverse information which focuses on the learning and teaching process, preferred teaching method, projected educational objectives and accepted values applicable throughout the entire process. An instructor holding the pedagogical knowledge can simply understand the information and skills of the students, learning tendencies favored by them and their attitudes towards learning. The technology knowledge includes the information related to the computer, smart phones, tablets etc. advanced technology devices (Koehler & Mishra, 2009). TPACK, since includes all these three main titles/areas, then may be used for applying the best drawn experiences on the technology integration process of the learners (Hilton, 2016).

An instructor holding the technological content knowledge will hold a control not only on the subject matter of teaching but also on the method of teaching specific to that subject since technology will be included in the methodical/teaching process. The teachers should ensure the availability of the correctly preferred technological tools and need to have a good practice on them as required by the educational objectives/outcomes. This sub-area is defined as the pedagogical content knowledge. The technological pedagogical content knowledge is the common ground for all the applicable processes under the model. An instructor having competency of the main areas will hold a good control of the technology and be capable of negative and positive signals of the learners throughout the learning process (Mishra & Koehler, 2006).

TPACK technology integration model expresses that effective technology integration may not be efficient without an existing solid common ground of all the aforementioned areas. A instructor applying the TPACK model is expected to make the correct technology selection in line with the subject matter of teaching whereas also to establish an relation between the preferred method of teaching and the selected technology. Consequently, an absolute balance must be placed among all the

model areas/titles to achieve an effective technology integration (Koehler & Mishra, 2009). Finally, building up such a balance inevitably requires the self-efficacy of the teachers.

The self-efficacy perception of the instructors is expressed as their beliefs about the level of knowledge and skills they need in the education process. Whereas, an instructor with a high level of self-efficacy may be naturally expected to demonstrate a more resistant attitude towards the incidences that may arise through the learning process and stage a more hardworking manner to ensure the learners explore themselves. The teachers with high self-efficacy levels may conduct the processes, such as technology selection, in a more efficient course. In addition, it offers new opportunities to learners by minimizing the problems that may occur. For this reason, it is important that instructors have self-efficacy perceptions regarding this process as well as self-efficacy (Kaçar & Beycioğlu, 2017). The technological self-efficacies of the teachers is being assessed by the International Society for Technology Education (ISTE). ISTE has designated the best practices and standards applicable for technology education (Sharp, 2014).

Basing on the respective literature, this study aims to clarify the self-efficacy perceptions of the Education Faculty members on the technology integration. The related sub-problems are listed below:

1. What is the level of the technology integration self-efficacy perceptions of the Education Faculty members?

2. Does the technology integration self-efficacy perceptions of the Education Faculty members;

a. demonstrate a significant difference according to the gender?

b. demonstrate a significant difference according to the age?

c. demonstrate a significant difference according to the department?

2. METHOD

This title includes the model, population and sample of the study, data gathering tools and process, and data analysis.

2.1. Research Model

This study utilizes a qualitative research method to present the technology integration self-efficacy of the Education Faculty members with regard to the several variables. The general survey model is preferred as the qualitative research method. The purpose of preferring the general survey model is to exhibit the several features of a certain group i.e. to demonstrate the differing distributions of the researched study questions over one or more variables (Fraenkel Wallen & Hyun 2012). The univariate analysis is preferred in the study to demonstrate if the technology integration self-efficacies of the faculty members differ over the gender, age and branch (department) variables.

2.2. Population and Sample

The sample of the study consists of the 207 faculty members acting under the Education Faculty in Turkey. The demographic distributions of the included participants are given in the following tables. The gender distributions are given under Table 1, age distributions under Table 2 and department distributions under Table 3.

Table 1. The gender variable distributions of the faculty members

Variables		**f**	%
Gender	Female	115	55,6
	Male	92	44,4
Total		207	100

As may be seen from Table 1, the 55,6% of the sample consists of female participants whereas the leaving 44,4% are the male participants. It is observed that the number of female participants is high.

Table 2. The age variable distributions of the faculty members

Variables		f	%
Age Interval	22-32 (1)	39	18,8
	33-43 (2)	57	27,5
	44-54 (3)	52	25,1
	55-65 (4)	32	15,4
	65 and older (5)	27	13
Total	207	207	100

As may be seen under Table 2, the age interval distributions of the faculty members in the study sample are as follows:18,8% between 22-32, 27,5% between 33-43, 25,1% between 44-54, 15,4% between 55-65 and 13%65 and older. The highest number of participants were in the category of 33-43 and the lowest in the category of 65 and over.

Table 3. The department variable distributions of the faculty members

Variables		f	%
Department	Computer and Teaching Technologies Department (1)	25	12
	Handicapped Training Teaching Department (2)	33	15,9
	Guidance and Psychological Consultancy Department (3)	28	13,5
	Pre-School Teaching Department (4)	22	10,6
	School Teaching Department (5)	19	9,1
	English Teaching Department (6)	20	9,6
	Social Sciences Teaching (7)	24	11,5
	Primary School Math Teaching (8)	36	17,3
Total	207	207	100

As can be understood from Table 3, the department distributions of the faculty members in the study sample are as follows: 12% Computer and Teaching Technologies Department, 15,9 Handicapped Teaching Department, 13,5% Guidance and Psychological Consultancy Department, 10,6% Pre-School Teaching Department, 9,1 School Teaching Department, 9,6% English Teaching Department, 11,5% Social Sciences Teaching Department and 17,3% Primary School Math Teaching Department. There are the most participants in the Primary School Math Teaching category and the least in the School Teaching Department category.

The technological device utilization periods/durations of the faculty members acting in the Education Faculty are shown under Table 4 whereas internet permanent access statuses under Table 5.

Table 4. Technological device utilization periods of education faculty members

Variables		f	%
Period	Less than 1 hour	51	24,6
	1-2 hours	69	33,3
	2-4 hours	44	21,2
	4-6 hours	31	14,9
	More than 6 hours	12	5,7
Total	207	207	100

The Table 4 shows the technological device utilization durations of the participating faculty members as: 24,6% less than 1 hour, 33,3% 1-2 hours, 21,2% 2-4 hours, 14,9% 4-6 hours and 5,7% more than 6 hours.

Table 5. Permanent access to the internet

Variables		f	%
Gender	Yes	186	89,8
	No	21	10,2
Total		207	100

Table 5 designates that the 89,8% of the participating faculty members are connected to internet permanently whereas 10,2% of the same are not connected permanently.

2.3. Data Gathering Tools

The study has used the Personal Information Form including the demographic data of the participants and Technology Integration Self-Efficacy Perception Scale which had been translated to Turkish by Ünal and Teker (2018). This scale had been developed by Wang and Woo in 2007 aiming to demonstrate the technology integration self-efficacy perceptions of the individuals. The scale is a five points Likert type and includes 19 articles. The Likert points are as follows: I definitely do not agree (1), I do not agree (2), I am neutral (3), I agree (4) and I definitely agree (5). All the articles used in the scale are positive sentences. This scale also has two sub-dimensions which are self-competency of making others use the computer technologies and self-competency of using computer technologies. Cronbach's Alpha Internal Consistency Coefficient is calculated to understand the reliability of Technology Integration Self-Efficacy Perception Scale and the result has come as 0.93. For the data analysis process, the arithmetical means of the data coming from the scale have been used. KMO and Barlett tests, which have been performed to secure the suitability of the Technology Integration Self-Efficacy Perception Scale with the factor analysis, are understood to be significant. The significant values obtained from such tests show that the data is normally distributed. Finally, the Table 6 demonstrates the parameters used for the arithmetic mean points coming from the data related to the sub-dimensions of the Technology Integration Self-Efficacy Perception Scale.

Table 6. The parameters used for the arithmetic mean points coming from the data related to the sub-dimensions of the technology integration self-efficacy perception scale

Total Scale Point Interval	Average (Mean) Scale Point Interval	Assessment Parameter
x ≤48	1.0 - 2.49	Low
48 ≤x ≤66	2.5 - 3.5	Uncertain
x >66	3.51 -5.0	High

2.4. Data Gathering Process and Analysis

In the first place, the permission of the Ethical Board has been obtained for the study. A Personal Information Form has been generated to understand the genders, ages, departments, technological device using durations, permanent internet access statuses of the Education Faculty members participating to the study. All the participants are given a general information wording to make them understand the objectives of the study. The participation to the study is volunteering based. The utilized Technology Integration Self-Efficacy Perception Scale has been generated through Google forms.

The data obtained through the research has been transferred to the computer environment by the researcher. Following, such data has been made ready for data analysis. The gathered data is checked and 12 erroneous and missing responses are not included in the analysis. To understand the distribution of the data, the coefficients of kurtosis and skewness are considered. The coefficients of kurtosis and skewness must be between +1 and -1 (George & Mallery, 2010). When examined the data of this study, it may be seen that the kurtosis and skewness values demonstrate a normal distribution i.e. a normal distribution of the data. Accordingly, the parametric analyses are performed. The independent sample t-test and one-way analysis of variance (ANOVA) have been conducted for the data analysis process. The SPSS 21.0 computer program is preferred for the analysis of data.

3. FINDINGS

This title of the study includes the findings obtained through the analysis of the study data.

3.1. Findings Related to the First Sub-Problem

The first problem of the study includes the descriptive statistics related to the self-efficacy (self-competency) of the Education Faculty members on using the computer technologies and enabling others to use the same. The findings obtained are given below. Table 7 demonstrates the descriptive analysis related to the technology integration self-efficacy perceptions of the members acting in the Education Faculty.

Table 7. The descriptive analysis results related to the sub-dimensions of the technology integration self-efficacy perceptions of the members acting in the education faculty

Sub-dimensions related to the Scale	x̄	SD	Skewness	Kurtosis
Dimension of Self-Efficacy in Using the Computer Technologies	4,21	,54	-,402	-,741
Dimension of Self-Efficacy in Making Others Use the Computer Technologies	4,29	,32	-,707	-,458
Technology Integration Efficacy Scale	4,26	,31	-,599	,558

The general average of the study data, which have been obtained to understand the technology integration self-efficacy perceptions of the faculty members acting in the Education Faculty, has been computed as 4,26 with a standard deviation of .31. The average of the first sub-dimension (self-efficacy to use the computer technologies) has been found as $\bar{x}$=4,21, and the average of the second sub-dimension (self-efficacy to make the other use the computer technologies) was $\bar{x}$=4,29. When these values are considered with regard to the technology integration self-efficacy scale evaluation criterion, it can be claimed that the self-efficacy perceptions of the faculty members are high. It can be said that the high percentage of access to the internet network of the target audience may also be effective in this situation.

3.2. Findings Related to the Second Sub-Problem

The arithmetical means of the technology integration self-efficacy perceptions of the faculty members acting in the Education Faculty demonstrate a normal distribution. To understand if the technology integration self-efficacy perceptions of the faculty members vary according to the gender, an unpaired t-test has been conducted. The results may be seen under Table 8.

Table 8. The results of the unpaired t-test related to the technology integration self-efficacy perceptions of the faculty members acting in the education faculty

Sub-dimensions related to the Scale	Gender	N	x̄	sd	T	sd	p
Dimension of Self-Efficacy in Using the Computer Technologies	Female	115	4,0	,53	-6,9	205	,000
	Male	92	4,47	,42			
Dimension of Self-Efficacy in Making Others Use the Computer Technologies	Female	115	4,21	,34	-3,9	205	,000
	Male	92	4,39	,26			
Technology Integration Competency (Efficacy) Scale	Female	115	4,1	,32	-6,7	205	,000
	Male	92	4,4	,23			

The analyses have been performed to understand if a significant difference between the technology integration self-efficacy perceptions over genders exist or not; whereas, it has been seen that a significant difference has been existing ($t=-6,9$, $p<.05$). A significant difference may be seen in

the points obtained from the general average of the technology integration efficacy/competency scale (t=-6,7, p<.05). The data shows that male faculty members have higher perception levels of self-efficacy for the use and making others use the computer technologies compared to the female faculty members. It can also be said that the fact that they are mostly connected to the internet and spend time in front of the computer are effective in their high self-efficacy perceptions.

3.3. Findings Related to the Third Sub-Problem

The arithmetical means of the technology integration self-efficacy perceptions of the faculty members acting in the Education Faculty demonstrate a normal distribution. To understand if the technology integration self-efficacy perceptions of the faculty members vary according to the age interval, a one-way variance analysis (ANOVA) has been conducted. The descriptive analysis is given under Table 9 whereas the ANOVA results may be seen under Table 10.

Table 9. The descriptive analysis of the technology integration self-efficacy perception points of the faculty members according to the age interval

Sub-Dimension related to the Scale	Age Interval	N	x̄	Sd	Min	Max
Dimension of Self-Efficacy in Using the Computer Technologies	22-32	39	4,27	,55	3,00	5,00
	33-43	57	4,11	,56	3,00	5,00
	44-54	52	4,20	,52	3,17	5,00
	55-65	32	4,41	,43	3,33	5,00
	65 and older	27	4,09	,60	3,00	5,00
Dimension of Self-Efficacy in Making Others Use the Computer Technologies	22-32	39	4,39	,23	4,00	4,92
	33-43	57	4,36	,21	4,00	4,77
	44-54	52	4,39	,23	3,85	4,85
	55-65	32	4,34	,35	3,38	4,85
	65 and older	27	3,75	,19	3,15	3,92
Technology Integration Efficacy (Competency) Scale	22-32	39	4,35	,26	3,79	4,74
	33-43	57	4,28	,26	3,74	4,84
	44-54	52	4,33	,25	3,89	4,89
	55-65	32	4,36	,31	3,37	4,79
	65 and older	27	3,85	,27	3,11	4,16

Scheffe test has been conducted to understand the source of the self-efficacy perception differences of the faculty members over the age intervals. The results of the analysis have been given under Table 10.

Table 10. The one-way variance analysis of the technology integration self-efficacy perception points over age intervals of the faculty members acting in the education faculty (ANOVA results)

		Sum of Squares	Mean of Squares	F	P	Difference	Value of Effect
Dimension of Self-Efficacy in Using the Computer Technologies	Inter-Groups	2,36	,59	2,01	,093		
	Intra-Groups	59,1	,29			No Difference	
	Total	61,4					
Dimension of Self-Efficacy in Making Others Use the Computer Technologies	Inter- Groups	9,26	2,31	37,17	,009*	5-4, 5-3, 5-2, 5-1	,148
	Intra-Groups	12,5	,062				
	Total	21,8					
Technology Integration Efficacy (Competency) Scale	Inter-Groups	5,04	1,35	18,02	,000*	5-4, 5-3, 5-2, 5-1	,786
	Intra-Groups	15,1	,075				
	Total	20,5					

According to the results of the analysis performed to understand if a significant difference exists in technology integration self-efficacy perceptions of the faculty members of different ages, a significant difference has been spotted for the total technology integration self-efficacy points (F=18,02, p<.05). A significant difference could not be spotted for the dimension of self-efficacy in using computer technologies however a statistically meaningful difference is calculated for the dimension of self-efficacy in making others use the computer technologies (F=37,17, p<.05). Considering the obtained data, it is seen that the faculty members in the group of 65 years and older have a lower self-efficacy perception level in the dimension of making others use the computer technologies compared to the other age interval groups.

3.4. Findings Related to the Fourth Sub-Problem

The arithmetical means of the technology integration self-efficacy perceptions of the faculty members acting in the Education Faculty demonstrate a normal distribution. To understand if the technology integration self-efficacy perceptions of the faculty members vary according to the department, a one-way variance analysis (ANOVA) has been conducted. The descriptive analysis is given under Table11 whereas the ANOVA results may be seen under Table 12.

Table 11. The descriptive analysis of the technology integration self-efficacy perception points of the faculty members according to the department

Sub-Dimensions related to the Scale	Department	N	x̄	Sd	Min	Max
Dimension of Self-Efficacy in Using the Computer Technologies	Computer and Teaching Technologies Department	25	4,90	,18	4,5	5,0
	Handicapped Training Teaching Department	33	3,91	,54	3,0	4,83
	Guidance and Psychological Consultancy	28	3,89	,45	3,0	4,83
	Pre-School Teaching	22	4,09	,48	3,17	4,83
	School Teaching	19	3,95	,50	3,0	4,83
	English Teaching	20	4,23	,52	3,17	4,83
	Social Sciences Teaching	24	4,37	,29	4,0	4,83
	Primary School Math Teaching	36	4,32	,48	3,0	4,83
Dimension of Self-Efficacy in Making Others Use the Computer Technologies	Computer and Teaching Technologies Department	25	4,48	,30	3,62	4,85
	Handicapped Training Teaching Department	33	4,27	,27	3,69	4,85
	Guidance and Psychological Consultancy	28	4,21	,36	3,31	4,77
	Pre-School Teaching	22	4,21	,28	3,69	4,62
	School Teaching	19	4,42	,31	3,38	4,92
	English Teaching	20	4,24	,33	3,38	4,69
	Social Sciences Teaching	24	4,41	,23	3,85	4,85
	Primary School Math Teaching	36	4,16	,34	3,15	4,69
Technology Integration Efficacy	Computer and Teaching Technologies Department	25	4,61	,19	4,05	4,89
	Handicapped Training Teaching Department	33	4,16	,25	3,58	4,68

(Competency) Scale	Guidance and Psychological Consultancy	28	4,11	,33	3,32	4,74
	Pre-School Teaching	22	4,17	,23	3,68	4,53
	School Teaching	19	4,27	,31	3,37	4,68
	English Teaching	20	4,24	,34	3,32	4,68
	Social Sciences Teaching	24	4,40	,21	3,89	4,74
	Primary School Math Teaching	36	4,21	,31	3,11	4,68

A one-way variance analysis has been conducted to understand if the technology integration self-efficacy perceptions of the faculty members acting in the Education Faculty differ over departments. Following, to express the source of the differences in technology integration self-efficacy perceptions over the departments, a Scheffe test has been performed. The results may be seen in Table 12.

Table 12. One-Way variance analysis of the technology integration self-efficacy perception points over departments of the faculty members acting in the education faculty (ANOVA results)

		Sum of Squares	Mean of Squares	F	P	Difference	Value of Effect
Dimension of Self-Efficacy in Using the Computer Technologies	Inter-groups	20,26	2,89	13,98	,000	1-2,1-3,1-4,1-5,1-6,1-7,1-8	0,66
	Intra-groups	41,20	,207				
	Total	61,46					
Dimension of Self-Efficacy in Making Others Use the Computer Technologies	Inter-groups	2,49	,35	3,67	,001	1-8	0,92
	Intra-groups	19,3	,09				
	Total	21,8					
Technology Integration Efficacy (Competency) Scale	Inter-groups	4,76	,68	8,59	,000	1-2,1-3,1-4,1-5,1-6,1-7,1-8	0,82
	Intra-groups	15,7	,07				
	Total	20,5					

The results of the one-way variance analysis (ANOVA), performed to understand if a significant difference exists in technology integration self-efficacy perception mean points (F=13,98; p>.05) of the faculty members from various faculty departments, a significant difference has been spotted for the department averages. It is seen that the faculty members under Computer and Teaching Technologies Department enjoy a higher self-efficacy in competence of using technology compared to the other departments. Besides, another significant difference has been spotted between the average points of self-efficacy in making others use the computer technologies (F=3,67; p>.05). There is a significant difference between the lecturers working in the computer and instructional technologies teaching department and the lecturers working in the elementary mathematics teaching department. In other words, the self-efficacy of the instructors in the computer technologies and teaching department to use computer technologies is higher.

4. DISCUSSION and CONCLUSION

The study has targeted to establish the technology integration self-efficacy perceptions of the faculty members acting under the Education Faculty. The conclusions for the related sub-problems are given below.

The first sub-problem of the study is "What is the level of the technology integration self-efficacy perceptions of the Education Faculty members?" When considered the average points of the faculty members acting under the Education Faculty for the technology integration self-efficacy perception scale, it may be seen that the self-efficacy perceptions of the faculty members are high. It can be claimed that such a high self-efficacy perception level may facilitate the process of adapting the new technologies to the teaching processes. In addition to that, one may say that the faculty members acting under the Education Faculty have such a high self-efficacy perception thanks to the curriculum content of their bachelor programs. The other positive factors can be listed as the awareness of the necessity to adapt for the new technologies under the competitive approach of the digital era, importance attributed to the use of teaching technologies in faculties of education, faculty members already making use of the technologies in their professional practices and the distance education experiences favored by the faculty members due to COVID-19 pandemic necessities. When the literature is scanned, some similar studies may be spotted which also demonstrate the high level of technology use and high level of self-efficacy perceptions by the teachers (Doğan & Doğan, 2022; Güneş & Buluç, 2017).

The second sub-problem of the study is "Does the technology integration self-efficacy perceptions of the Education Faculty members demonstrate a significant difference according to the gender?" The results showed that a significant difference has been existing between the genders with regard to the self-efficacy of the faculty members in using the computer technologies and making others to use the same. It may be claimed that the reason for this might be the female faculty members using the computer technologies little bit lesser than their male colleagues or their lesser interest towards the technology compared to the male faculty members. In other words, the male faculty members show a greater interest and appetite on computer technologies and also spend more time in front of the computer technologies compared to the female faculty members. When the literature is assessed, it can be seen that the technology integration self-efficacy perception varies according to the gender. A study conducted by Ünal and Teker (2013) has analyzed the self-efficacy perception on the use of the computer technologies. The results of the said study show that the male candidate teachers have a greater self-efficacy perception than the female candidate teachers. Arslan, Kutluca and Özpınar (2011) have shown, similarly, the male candidate teachers employ a higher computer competency compared to the female candidate teachers. Aydoğmuş and İbrahim (2022), TPACK competencies of teacher candidates variable according to gender was determined. Gönen and Kocakaya (2015) have researched the technological-pedagogical educational competencies of the candidate teachers. The study has proven that the male candidate teachers enjoy a higher self-efficacy perception compared to the female candidate teachers. It can be claimed that the results of this study coincide with the results of the other studies in the literature.

The third sub-problem of the study is "Does the technology integration self-efficacy perceptions of the Education Faculty members demonstrate a significant difference according to the age?" The findings from the age variable demonstrated no significant difference for the dimension of using the computer technologies; however, a significant difference has been spotted for the dimension of making others use the computer technologies. The faculty members of 65 years old and older demonstrated a lower self-efficacy perception level compared to the other age groups. The study performed by Archambault and Crippen (2009) has shown that older aged teachers had had a good control on the pedagogy and content areas however did not find themselves sufficient by means of their technology knowledge. Moreover, the teachers newly starting their professional careers are understood to be more desiring, interested and self-confident to use the computer and communication technologies in the teaching processes when compared to their experienced colleagues (Efe, 2011). In the study of Doğan and Doğan (2022), the efficacy perceptions of primary school administrators with 16 years or more of management seniority are significantly lower than the perceptions of school

administrators with 6-10 and 11-15 years of seniority. Accordingly, we may suggest that in-service trainings may be organized for the higher-aged faculty members which will, in turn, increase their self-efficacy perceptions in this area.

The fourth sub-problem of the study is "Does the technology integration self-efficacy perceptions of the Education Faculty members demonstrate a significant difference according to the departments?" The findings obtained from the Department variable demonstrate a significant difference with regard to the self-efficacies over the dimensions of using the computer technologies and making others use the same. When we examine the faculty members from different departments with regard to the technology integration self-efficacy perceptions thereof, the faculty members from the Computer and Teaching Technology Department have shown a statistically significant difference for both dimensions when compared to the faculty members from other departments. The lowest self-efficacy perception levels are spotted for the faculty members from the School Teaching Department and Primary School Math Teaching Department. When we examine the literature, it may be claimed that the faculty members from the Computer and Teaching Technologies Department demonstrate such a positive difference since they professionally prepare technology contents already in their routine and deal with different course contents related to the technology which, these in turn, might have been contributing to their higher self-efficacy perceptions, better skills and accepting manners towards the technology integration phenomenon. Azgın and Şenler (2017) in study, it was revealed that teachers' TPACK approaches did not differ according to the departments they graduated from Turan-Güntepe and Keleş (2022), in the study although some of the instructors took similar courses at undergraduate and graduate level and did similar studies on technology, it was also observed that they did not reflect technology in their lessons.Accordingly, it has been seen that the high self-efficacy perceptions demonstrated by the faculty members from the Computer and Teaching Technologies Department had been in suit with the other results in the literature (Akkoyunlu & Soylu, 2010; Kabakçı-Yurdakul, 2011). Considering the 2007 dated Higher Education Board Teacher Training Program; it can be seen that the Computer and Teaching Technologies Program has mostly focused on technologies and technology integration practices. In contrast, the other programs are understood to include only a single basic computer course in a single stage (Tatlı & Akbulut, 2017) The technology may not be deemed separate from the pedagogical professional knowledge area but which indeed is the biggest problem for the process of technology integration (Mishra & Koehler, 2006).

As a result, it was determined that the level of technology integration self-efficacy perceptions of the lecturers working in the Faculty of Education was high. In addition, it was found that their perceptions differed according to gender, age level and department.

4.1. Future Directions

Save Computer and Teaching Technologies Department, all the departments in the Education Faculties should be provided actual education technologies courses and contents related to the technology integration process instead of the existing practice of maintaining a single basic computer course.

The actual practices of education technologies should be provided to the faculty members in the form of in-service trainings. Accordingly, the technology skills of the faculty members, as well as their self-efficacy perceptions, can be supported for better.

The faculty members should be provided information about the computer software that may be integrated with the respective course contents including certain exemplifying practices.

Ethics Committee Decision

This research was carried out with the permission of Beykoz University Scientific Research and Publication Ethics Committee with the decision numbered 2023/06 dated 17.02.2023.

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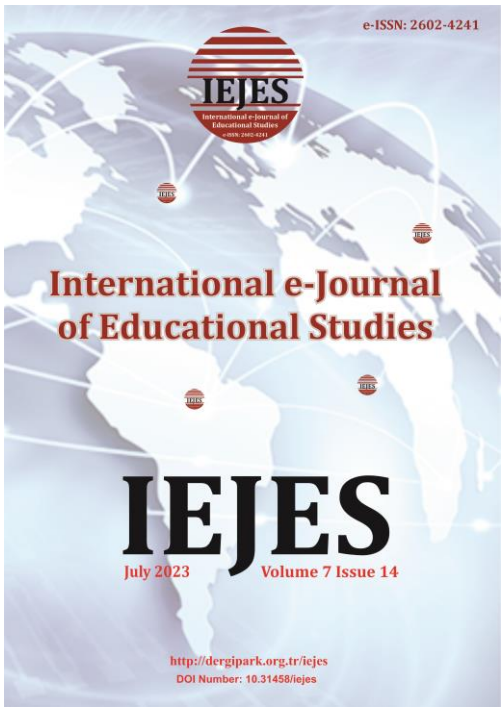

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Abstract

Social Studies is one subject matter which is learned by students in schools. It could attract the students' attention and interest in learning process when teachers utilize technology based instructional media. This study aims to investigate how instructional application promotes the students' critical thinking on social studies in primary school. This study was conducted in one of primary schools in West Java. There were 65 students participating in completing the questionnaire. In addition to the questionnaire, interviews for seven selected students were also done for collecting the data. The results showed that most students felt happy to learn social studies when using instructional application. This study also revealed that instructional application could increase the students' critical thinking skills indicated by their strong statements on sharing opinions, making conclusions, and asking questions. Thus, it is recommended that instructional application should be used by teachers in primary schools so as that students are more interested in learning social studies.

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Research Article

Promoting Students' Critical Thinking Skills on Social Studies in Primary School: TPACK based Instructional Media *

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Abstract

Social Studies is one subject matter which is learned by students in schools. It could attract the students' attention and interest in learning process when teachers utilize technology based instructional media. This study aims to investigate how instructional application promotes the students' critical thinking on social studies in primary school. This study was conducted in one of primary schools in West Java. There were 65 students participating in completing the questionnaire. In addition to the questionnaire, interviews for seven selected students were also done for collecting the data. The results showed that most students felt happy to learn social studies when using instructional application. This study also revealed that instructional application could increase the students' critical thinking skills indicated by their strong statements on sharing opinions, making conclusions, and asking questions. Thus, it is recommended that instructional application should be used by teachers in primary schools so as that students are more interested in learning social studies.

Keywords: Critical thinking skills, instructional application, primary school students, social studies, TPACK

1. INTRODUCTION

In order to produce high-quality education, numerous parties are continually developing learning media as one of the components of learning. There is always a reason behind the creation of learning media. The pace of modern demands and global competitiveness promotes innovation in a variety of ways. Innovation in learning media or technology necessitates ingenuity, particularly from teachers, who are the parties that interact with students directly an create conducive learning environment (Rahmat, 2020), and Social Studies is one of the many subjects where the development of learning media can be used.

In the Indonesian context, social studies is divided into two types, namely social sdtudies education for schools and social studies education for universities. Social studies for schools is the result of simplification of various social sciences and humanities disciplines, as well as basic human activities that are organized and presented scientifically and pedagogically or psychologically for educational purposes. Meanwhile, social studies in higher education is a selection of various social sciences and humanities disciplines, as well as basic human activities that are organized and presented scientifically and psychologically for educational purposes. Thus, the level of difficulty of the materials taught is adjusted to the level of knowledge and interest of students in schools. One thing to consider for the materials in elementary social studies deals with applying disciplinary concepts such

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as Civics, Economy, History, and Geography as well as Anthropology and Sociology which are integrated in instruction (Farris, 2015).

Social studies is a learning that studies and analyzes social problems from various activities in social life. Social studies can also be defined as the subject that combines various social sciences that are structured through educational and psychological approaches as well as their feasibility and meaningfulness for students and their lives (Prayitno, 2019). According to (Rofiq, 2020), social studies is a science that combines a number of selected concepts from other branches of social sciences and is then processed based on educational principles and activated to be used as a teaching program at the school level. In addition, he viewed that social studies describes the interaction of individuals or groups in society starting from the smallest such as families, community associations, villages, sub-districts, regencies, provinces, countries, and even the world. Thus, it can be implied that social studies is a lesson about various social sciences that are simplified for elementary to higher school level education.

Social studies learning is often considered boring as it only applies conventional methods with lectures and the use of textbooks (Passe, 2006). In addition, lack of time allocation for learning social studies is still low (Ollila & Macy, 2019). Social studies learning can be something more positive if teachers are willing to innovate and open up more spaces for students in learning through discussion. Classroom discussions will encourage students to be actively involved and practice their critical thinking skills. Discussions that are able to encourage student initiative can be done by having challenging questions. These types of questions must certainly be distinguished between low-grade and high-grade students or according to the age of the student. Examples of questions that can be given are why the air in the highlands is cold, why the culture in Indonesia is different, or other questions that can provoke students to discuss. In line with this, teachers could use avoiding, diminishing, and embracing as their approaches in teaching social studies (Martell, 2017).

Due to the seeming lack of boundaries in the modern society, we can readily get a variety of information. As a result, many people have problems with various global issues. Each nation faces a problem in preserving its stability across a number of areas due to global issues. Every citizen will encounter this global issue, whether directly or indirectly, voluntarily or unwillingly, and every citizen will, of course, respond in a variety of ways. Maintaining the spirit of citizenship while learning social studies presents significant obstacles. The ability to respond to varied global concerns and ignore the adverse effects that arise is anticipated of social studies education (Byker & Vainer, 2020). The impact of globalization also causes Indonesia's younger generation to reject the nation's excellent ideals and become accustomed to behaviors that go against those principles.

The results of the identification of current social studies learning constraints show that there are at least four social science learning problems, namely (1) disruptive student behavior such as wandering and playing games during learning, unruly, not doing the assignments given to make noise in the classroom, not paying attention, drowsiness, and chatting in class; (2) lack of learning facilities and infrastructure in which books and learning media are lacking); (3) difficulty understanding the material outside the field of science; (4) less varied learning methods (Rahmawati & Zidni, 2019). The social studies learning process in schools so far tends to emphasize mastery of the subject matter as much as possible and does not integrate the social science curriculum to promote the instruction in the elementary classroom (Demoiny, 2020).

The results of researchers' observations at one of Islamic Primary Schools in West Java, Indonesia showed several learning problems in social studies in that school. Social studies learning currently focused on teachers only, namely by using the lecturing method. The teacher had a dominant role in transferring knowledge to students. Students in the classroom only passively listened to what the teacher conveyed. It was not uncommon for students to feel bored following learning in class. Student's boredom was shown by seeking other activities unrelated to learning, such as talking to the

classmates and playing alone. Apart from teaching materials in the form of textbooks, teacher's books and student books, there were no other media used in social studies learning.

These obstacles must be overcome immediately since the challenges of social studies in the future are greater. Social studies learning is required to be more innovative in facing the global community era 5.0. In addition, social studies need to be taught and studied in a cross-disciplinary way in order to develop civic education while improving social thinking skills in students (Abricot et al., 2022). Such rapid changes in the world without being balanced by the speed of educational adaptation will cause its own educational crisis. Whatever changes occur in the future, what must be prepared is the way the students respond and prepare by themselves in the face of those changes. Social studies learning plays a big role in preparing quality human resources for development. This requires social studies learning to make changes in accordance with the demands of globalization. One of them is related to technological innovation.

The use of information and communication technology (ICT) is very important for education in Indonesia. The use of technology can stimulate students' interest in learning. The ability of elementary school students in mastering ICT today is undoubtedly as most students already have their own mobile phones. Students' ability to use ICT is not only used in seeking entertainment, but also in determining the goals of the learning process as well as their future desires (Aparicio Gómez, 2020; Wakil, Rahman, Hasan, & Jalal, 2019). Thus, students' interest in mobile phones is so great that it can be a gap for teachers to integrate technology in social studies learning. Teacher creativity and innovation are needed to create technology-based social studies learning media.

There are several definitions of instructional media according to experts. Instructional media is a tool that can help the teaching and learning process so that the meaning of the message conveyed becomes clearer and educational or learning goals can be achieved effectively and efficiently (Nurrita, 2018). It is further said that the instructional media should be able to encourage students to develop their knowledge competencies, skills and attitudes better (McDougall et al., 2018). Thus, it can be implied that instructional media is a tool used by teachers to deliver lesson materials to students so that the expected learning objectives can be achieved and are able to arouse motivation as well as interest in learning and student competence. Instructional media is said to be good if the media is able to help teachers in achieving learning goals in the classroom.

Talking about technological pedagogical content knowledge (TPACK), it is an approach that integrates technological developments and pedagogy. TPACK-based learning media is the right learning media because with the integration of technology in learning by teachers, learning becomes more effective and efficient. The TPACK framework is a useful tool for measuring the learning environment and displaying complex interactions between technological, pedagogical, and content knowledge (Herring et al., 2016). Knowledge needed by teachers to incorporate technology into their instruction in any subject area is referred to as TPACK. By applying the proper pedagogical techniques and technological tools while delivering content, teachers have an intuitive awareness of the intricate interactions between the three basic components of knowledge such as Content, Pedagogical, and Technological Knowledge (Santos & Castro, 2021). From these ideas, TPACK-based media could benefit to improve students' critical thinking skills.

In the context of the 21st century education, it requires formal schools to apply Critical Thinking, Communication, Collaboration, Creativity (C4) skills. Especially in critical thinking, it is the ability of students to think critically in the form of reasoning, expressing, analyzing, and solving problems (Cottrell, 2017). Critical thinking is shown by the individual's ability to criticize various kinds of phenomena that occur around and judge using the point of view he has. Then the individual is able to position himself from an inappropriate situation, into a situation that favors him.

There are several reasons for the need to develop critical thinking skills in the 21st century: (1) improving cognitive function; (2) preparing for academic and professional life; (3) realistic self-

evaluation (Cottrell, 2017). As a higher order thinking skill (HOTS), students need to be accustomed to critical thinking in order to later be able to solve various problems faced in everyday life. One way to train students' critical thinking skills is to use the right learning media.

Several previous studies have shown that the use of TPACK can actually improve students' critical thinking skills. Goradia (2018) in his study showed that TPACK-based learning design helped students' critical thinking skills. This finding is reinforced by research conducted (Aydoğmuş & Ibrahim, 2022; Shafie et al., 2019) which stated that the learning of TPACK-based instruction was increasing. The other research by Blackwell et al (2016) revealed that teachers were influential for TPACK-based learning effectively in preschool education. This current study emphasizes on social studies which are equipped with TPACK-based learning media in the primary school, and this is rare to conduct. Based on this exposure, a study is needed on the use of TPACK-based learning media in promoting students' critical thinking skills in the primary school.

2. METHOD

2.1. Research Model

This research used a mixed model in which provided the data quantitatively and qualitatively. It described the percentages of the students' responses to each question, and it presented the results of the collected data of the interviews.

2.2. Participants

The participants of the research were the students of one of Islamic Private Schools in West Java, Indonesia. The number of the participants were 65 students. The following is described the participant demography.

Table 1. Participant demographic ınformation

Categories		Number of participants (N=65)	Percentage (%)
Gender	Female	33	51%
	Male	32	49%
Age	11	48	74%
	12	17	26%
Distance from Home	< 500 Meters	6	9%
	< 1 Km	16	25%
	< 2 Km	17	26%
	< 3 Km	9	14%
	> 3 Km	17	26%
Interests in Learning Social Studies	Yes	56	86%
	No	3	5%
	No idea	6	9%
The topics which are most liked	Unity in diversity	13	20%
	Public Figures and Inventions	33	51%
	Save Creatures	7	11%
	Globalisation	9	14%

From Table 1, it could be seen that the percentages of the participants were almost equal: 51% for female students and 49% for male students. Most of the participants were at 11 years old (74%). Dealing with their interests in the subject of Social Studies, 86% of the participants liked that subject. Of 86% they mostly preferred Public Figures and Inventions as their favourite topic.

2.3. Data Collection Process

The instruments used were the online survey that was filled out by the participants. They chose oen of the options available from strongly agree to strongly disagree. After distributing the

questionnaire, the interview was conducted to the eight students chosen for a fifteen-minute interview for each participant. The eight participants were labelled with S04, S09, S11, S16, S17, S22, S32, and S57.

2.4. Data Analysis

A descriptive statistic was employed to assess the questionnaire data once the data had been gathered. The interview data were analysed using a descriptive analysis (Creswell, 2018). First, data collected were reduced for having appropriate responses. Then, the data were displayed and had relevant data to the research questions. Finally, the data were descriptively reported to support the results of questionnaire.

3. FINDINGS

3.1 Students' Perceptions of Social Studies

Table 2. Perceptions of social studies

No	Question Items (Needs)	D	N	A	Total	Mean	STDEV
1	I feel happy to study social studies.	5%	14%	82%	100%	2.77	0.52
2	Learning process of social studies in the classroom is not exciting.	74%	15%	11%	100%	2.63	0.67
3	Teacher's delivery of social studies materials is boring.	83%	8%	9%	100%	2.74	0.62

In line with table 1, it was found that most students felt happy to learn social studies (82%), meanwhile there were only 5% of students who did not enjoy learning it. Related to the learning atmosphere, 74% of the students were found excited with the learning process of social studies in the classroom. It also revealed that most students disagreed to the statement of what was delivered by teachers on social studies materials was boring.

3.2. The advantages of Instructional Application

Table 3. The advantages of instructional application

No	Question Items (Needs)	D	N	A	Total	Mean	STDEV
4	It is easy to use learning application of social studies.	0%	18%	82%	100%	2.81	0.39
5	Learning application of social studies is interesting as it has some features such as pictures, videos, games and quiz.	2%	9%	89%	100%	2.88	0.37
6	Learning social studies with application is enjoyable.	3%	11%	86%	100%	2.83	0.45
7	I understand social studies materials when using the application.	2%	14%	85%	100%	2.83	0.42

In the above table, it indicated that there were more benefits of using instructional application when learning social studies. 82% of the students stated that it was not difficult to utilize the application for learning social studies. In addition, most students found that the applications used for learning social studies contained useful features such as pictures, videos, games, and quizzes 89%). Therefore, 86% of the students really enjoyed learning social studies with that technology. Finally, most students could understand social studies better when using the applications provided by the teacher.

3.3. Critical Thinking Skills

Table 4. Students' critical thinking skills

No	Question Items (Needs)	D	N	A	Total	Mean	STDEV
8	With learning application of social studies, I can share opinions or criticism on the questions from teacher politely.	2%	14%	85%	100%	2.83	0.42
9	With learning application of social studies, I can make conclusions on the discussed materials.	2%	15%	83%	100%	2.81	0.43
10	With learning application of social studies, I can ask questions to teacher and my classmates.	5%	11%	85%	100%	2.80	0.51

Dealing with the students' critical thinking skills on the use of learning applications, it was disclosed that 85% of the students could share their opinions or critical ideas on the teacher's questions politely. The students were also found that they could make conclusions on the materials to discuss (83%). The students also could address questions to their teachers and classmates after they learned social studies using the applications.

Besides having some results from a questionnaire, there were some ideas from some selected students. When being asked about their enjoyment of learning social studies materials, most of the students gave affirmative opinions as said by S09, S11, S22, and S57.

Do you enjoy studying social studies?

S09: "My answer is yes, because we can increase knowledge on social studies lesson which I believe that lesson is exciting and enjoyable".

S11: "Yes, I am now much more interested in Indonesian history, and this makes me know more about the events in the past time".

S22: "Yes, because we can know or learn many examples of globalization, discovery discoveries, etc. as well as can add science".

S57: "Yes, although social studies is not my favourite lesson, I like to learn social studies because I think social studies learning can add and hone about science and history".

Related to how the social studies subject was boring, most of the students also said that social studies was exciting as the teacher was pleasing, provided some games, and encouraged students to be knowledgeable. However, few students mentioned that teacher gave more tasks than explanations. The followings are some ideas from S11, S16, S22, and S57.

Is the social studies subject material/theme boring?

S11: No, it actually depends on the teacher who teaches. But my teacher was quite interesting in teaching

S16: Yes because there are more tasks than explanations

S22: No, learning will not be boring because by learning we can become intelligent and have a lot of knowledge

S57: No, because when I study social studies, there are usually exciting games that I like

When talking about the learning application or technology, most students agreed that learning social studies with application was fun and could be understandable better. As it is stated by S04, S17, and S22.

What do you think about this social studies learning media application?

S04: I think this social studies learning media application is fun not boring with it I can understand the material

faster.

S17: Fun, not monotonous, fun and the material is easy to understand so that we have an idea of the material we are studying

S22: It can teach us all about social studies lessons easily understood with all its explanations and examples

The learning application seemed to be influential to promote the students' interests in learning social studies subject. The finding showed that students were not bored and could have positive views on social studies as it was said by S04, S32, and S57. However, S16 responded that it was much better when students learn social studies better by listening and questioning without the use of application.

After using this social studies learning media application, have you become familiar with social studies material?

S04: "Yes, because by using the social studies learning media application I became more focused, because it was not boring".

S16: "No, because if it's done by the teacher we can listen and ask questions easily".

S32: "Yes, because there are many interesting things such as the occurrence of wars, the start of the establishment of ASEAN, and knowing the figures of inventors of goods".

S57: "Yes, at first I didn't understand social studies. But, because I am interested in this application, I can become more familiar with social studies learning".

For more benefits of using learning application to learn social studies, all the students believed that they could understand the material faster and have more knowledge. It is stated by S04, S22, and S57 in the following.

What are the benefits of this social studies learning application for you?

S04: I became quicker to understand the social studies material given.

S22: The application can provide more knowledge in social studies lessons, of course, easily understood, it can also increase knowledge

S57: This application can teach school students to better understand and have more opinions in social studies learning.

4. DISCUSSION and CONCLUSION

This current study aimed to investigate how instructional application promotes the students' critical thinking on social studies in primary school. The result showed that students in the primary school enjoyed learning social studies in the classroom. It was found as the teacher created a pleasant atmosphere and delivered the materials on social studies clearly. It is in line with what was found by Anwar et al. (2022) saying that students had higher interests in learning social studies in the primary schools.

Another result revealed that the use of learning media or applications provided by the teacher in the instruction of social studies could motivate the students to understand the materials as it contained some beneficial features and it was easy to use. This finding was relevant to the study by Puspitarini and Hanif (2019). They found that the use of technology in the instruction could motivate and improve students' learning process. Another study disclosed that the students who used android-based interactive multimedia would be better in their understanding the lesson (Humairah et al., 2020; Miaz et al., 2019). The mobile-learning also provided students' opportunities to acquire skills and use the best technological facilities in order to reach learning outcomes (Abd Samad et al., 2021). Android-based application was believed to improve the students' learning activities (Murdiono et al., 2020).

The result also discovered that the utilization of learning applications could promote the students' critical skills. Students were able to share their critical ideas or opinions as well as make

their own conclusions on the discussed materials and ask some questions to teacher and their friends. This is supported with the study that yielded that the students' critical thinking skills in the experimental group increased with higher criteria. In addition, they found the students who used electronic interactive teaching materials increased their critical thinking skills (Sinaga & Setiawan, 2022). The other finding showed that mobile-problem based learning app had a positive effect on the critical thinking skills of the students (Ismail et al., 2018).

Based on the results and discussion, it is then inferred that the use of learning application to accommodate the social studies subject in the primary school could promote the students' critical thinking skills. The technology-based media of instruction has been believed to boost the students' interests and motivations in learning social studies better, mainly in promoting their critical thinking skills such as giving critical ideas, making summary, and asking questions. Thus, it is recommended that the increase of students' critical thinking be affected by the utilization of learning apps as the media of instruction in the classroom and in e-learning situations.

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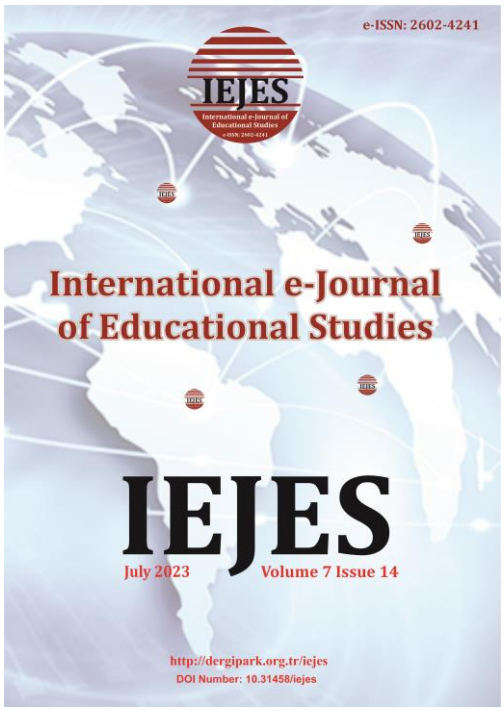

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Abstract

This study it is aimed to examine the effect of using web 2.0 tools in algebra teaching on student achievement and attitude. The research was carried out with 42 students studying in the 6th grade of a public secondary school in Rize in the second term of the 2022-2023 academic year. In the study, in which an unequal quasi-experimental design with the pretest-posttest experiment-control group was used, there were 22 students in the experimental group and 20 students in the control group. In the study, quantitative and qualitative research designs were used together. "Algebraic Expressions Achievement Test (CIBT)" developed by Okuducu (2020) and "Attitude Scale Towards Mathematics Lesson (MDKTÖ)" developed by Baykul (1990) were used as data collection tools. In addition, the "Semi-Structured Interview Form" developed by the researchers was used. While the lesson plan containing learning activities supported by web 2.0 tools was applied to the experimental group, no intervention was made in the control group. CIBT and MDKTÖ were applied to these groups as a pre-test before the application and as a post-test after the application. In addition, at the end of each web 2.0 tools activity, the experimental group students were given opinion forms and their thoughts were taken. As a result of the statistical studies, it was concluded that the use of web 2.0 tools in algebra teaching contributed positively to the academic success of the students and positively affected the students' attitudes in mathematics teaching. In addition, when we look at the results of the semi-structured interview forms, it is concluded that algebra teaching, which is processed with web 2.0 tools, is more fun, increases interest and motivation and is permanent.

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Research Article

The Effect of Using Web 2.0 Tools in Algebra Teaching on Student Success and Attitude*

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Abstract

This study it is aimed to examine the effect of using web 2.0 tools in algebra teaching on student achievement and attitude. The research was carried out with 42 students studying in the 6th grade of a public secondary school in Rize in the second term of the 2022-2023 academic year. In the study, in which an unequal quasi-experimental design with the pretest-posttest experiment-control group was used, there were 22 students in the experimental group and 20 students in the control group. In the study, quantitative and qualitative research designs were used together. "Algebraic Expressions Achievement Test (CIBT)" developed by Okuducu (2020) and "Attitude Scale Towards Mathematics Lesson (MDKTÖ)" developed by Baykul (1990) were used as data collection tools. In addition, the "Semi-Structured Interview Form" developed by the researchers was used. While the lesson plan containing learning activities supported by web 2.0 tools was applied to the experimental group, no intervention was made in the control group. CIBT and MDKTÖ were applied to these groups as a pre-test before the application and as a post-test after the application. In addition, at the end of each web 2.0 tools activity, the experimental group students were given opinion forms and their thoughts were taken. As a result of the statistical studies, it was concluded that the use of web 2.0 tools in algebra teaching contributed positively to the academic success of the students and positively affected the students' attitudes in mathematics teaching. In addition, when we look at the results of the semi-structured interview forms, it is concluded that algebra teaching, which is processed with web 2.0 tools, is more fun, increases interest and motivation and is permanent.

Keywords: Algebra teaching, web 2.0 tools, success, attitude

1. INTRODUCTION

Change and development affect countries, societies and individuals of all ages. Technology, which is an indispensable part of our age, supports education and training and provides convenience as well as providing new opportunities (Atıcı & Yıldırım, 2010). In recent years, it has been observed that the use of digital technologies in daily life has increased gradually and subsequently, changes in many areas have been observed (Elçiçek & Erdemci, 2021). With the continuous change of technology and knowledge, it develops and changes different ways in mathematics teaching. Although there are various reasons for these technological developments, their results in education should not be overlooked (Yemen, 2009). By using web-based educational tools in mathematics education, students in education and mathematics education will develop their skills of performing non-memorial operations on the subject shown, attract students' attention, see and learn the concrete form and application of mathematics by combining it with life (Kilit & Güner, 2021). Since technology is an extension of human beings, fundamental technology change will always express our worldview and change our worldview (Özüsağlam, 2017).

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Active learning methods that are beneficial for the learner are preferred to increase productivity in education (Soydaş-Çakır & Akyazı, 2021). Depending on technological developments, using Web 2.0 technologies in students' daily life and teaching has gained significant importance (Ajjan & Hartshorne, 2008). While teachers contribute to the enrichment of the educational environment by using technological tools and materials such as Web 2.0 in line with their abilities (Orhan, Kurt, Ozan, Vural, & Türkan, 2014), they provide individuals with the opportunity to raise individuals who use information effectively by providing them with the skills required by the information age (Deperlioğlu & Köse, 2010). With the developing educational technologies, the classrooms form active and applied classroom environments where students learn by doing and experiencing traditional classroom models. Web 2.0 applications positively affect individuals' motivation and interest in the lesson (Efe-Aslan, Söylemez-Hak, Oral & Efe, 2014). In an area where abstract concepts such as mathematics are abundant, and students have difficulty in understanding, different resources may be needed to facilitate the interpretation process (Gün-Şahin & Gürbüz, 2022). With the help of these technological tools, we can do the subjects we cannot embody most of the time in daily life and the immediate environment. Thanks to these computer-aided teaching tools, software materials are designed for teaching mathematical concepts that are difficult to embody in mathematics (Kutluca, 2007). We can say that one of the subjects that secondary school students cannot embody is undoubtedly the algebraic expressions they have just added to their lives. Algebra teaching begins around the age of 13-14, which coincides with the age at which they begin to think abstractly (Altun, 2016). It is necessary to benefit from computer-assisted algebra teaching (Baki, 2002).

When the literature is examined, it has been determined that the use of Web 2.0 technologies in different courses and at different grade levels positively affects students' academic success and course attitudes (Alp & Deveci, 2018; Bolatlı & Korucu, 2018). However, when the relevant literature is examined, there are few studies on the effect of using Web 2.0 tools in algebra teaching on student achievement and attitudes. Therefore, studies on this subject are needed. Many studies on the subject of algebra (Okuducu, 2020; Sarı, 2012) have been included in the literature. The development of algebraic thinking can be achieved through active experiences that students will have in the algebra sub-learning field. Because of this importance, the subject of algebraic expressions in algebra learning can be prepared by web 2.0 technology-supported teaching.

This study is expected to contribute to the literature on teaching algebra because it supports web 2.0 tools. Students' achievements and views on this model will guide further studies.

1.1. Purpose of the Research

This research aims to determine the effect of web 2.0 tools in algebra teaching on student achievement and attitude and students' views on these applications. The sub-problems of the research are as follows:

1. Is there a statistically significant difference between the achievement test scores of the experimental and control group students at the end of the application?
2. Is there a statistically significant difference between the experimental and control group students' attitudes toward mathematics at the end of the application?
3- What are the students' views on the teaching process regarding using web 2.0 tools in teaching algebra?

2. METHOD

2.1. Research Method

In this study, explanatory sequential design, one of the types of mixed designs, was used to determine the effect of using web 2.0 tools in algebra teaching on student achievement and attitude and whether it affects students' views on these applications. This pattern takes place in two stages.

Quantitative data are collected and analyzed according to the research question. Then, qualitative data are collected and analyzed (Creswell, 2014). The design of the study is summarized in Table 1.

Table 1. Pattern of the study

Group Name	Pre-application	Experimental Procedures	Post Experiment
Experimental Group	• Algebraic Expressions Achievement Test (CIBT) • Attitude Scale Towards Mathematics (MDKTÖ)	Web 2.0 supported Teaching Method	• Algebraic Expressions Achievement Test (CIBT) • Attitude Scale Towards Mathematics (MDKTÖ) • Structured Interview Form
Control Group	• Algebraic Expressions Achievement Test (CIBT) • Attitude Scale Towards Mathematics (MDKTÖ)	Traditional Teaching Methods	• Algebraic Expressions Achievement Test (CIBT) • Attitude Scale Towards Mathematics(MDKTÖ)

2.2. Participants

The study group of the research was determined as 6th-grade students studying at a public secondary school in Rize in the 2022-2023 academic year. Experimental and control groups were selected randomly. While 22 students consisting of 6th-grade students constitute the experimental group, 20 students constitute the control group.

2.3. Data Collection Tools

2.3.1. Algebraic expressions achievement test (CIBT)

CIBT, which he developed for his master's thesis in Okuducu (2020), was used as a data collection tool. The algebraic expressions achievement test (CIBT) was created by Okuducu (2020) and then applied to 150 7th-grade students of a secondary school in the Doğubayazıt district center. This application took place in 40 minutes, which is a class hour. A total of 30 questions were created for CIBT, ten from each outcome. As a result of the achievement test application, item analysis was performed, the items that needed to be eliminated or corrected were determined, and the test took its final form. Three items were excluded from the test because their discrimination was less than 0.20. The four items were reviewed by looking at the distinctiveness, and the necessary corrections were made and included in the test. The final version consisted of 27 questions and was prepared for research by taking expert opinions. Each correct answer was scored as "1 point", and the answer to the wrong or blank question was scored as "0 points". It was considered appropriate to complete the test application within one class hour.

2.3.2. Attitudes towards mathematics lesson scale (MDKTÖ)

In this study, the "Mathematics Attitude Scale" developed by Baykul (1990) was used to measure students' attitudes toward mathematics. This scale was developed for the research titled "Changes in Attitudes towards Mathematics and Science Courses from the Fifth Grade of Primary School to the Final Years of High School and Equivalent Schools and Some Factors Considered to be

Associated with Success in the Student Selection Examination". 30 items in the scale reflect 15 positive and 15 negative attitudes. According to the results of the factor analysis performed on the final version of the scale, the variance rate that a single factor could explain was found to be 0.56. The alpha coefficient of the mathematics attitude scale was found to be 0.96. Items in the scale were rated as strongly agree, generally agree, undecided, disagree, and never agree.

2.3.3. Semi-structured interview questions

In order to support the quantitative data collected in the research and to get their opinions on the web 2.0 tools used in algebra, semi-structured interviews were conducted with nine students from the experimental group at the end of the application. With open-ended questions, students' positive and negative thoughts about the web 2.0 tools used in algebra, whether they want web 2.0 tools in teaching other subjects in mathematics, the differences that distinguish the courses taught with web 2.0 tools used in algebra topics from the courses taught with other methods, whether web 2.0 tools affect their attitudes towards the math course. Semi-structured interview questions consisting of 5 items were prepared. This interview form was also examined by three faculty members who are experts in their fields. In line with the experts' suggestions, necessary arrangements were made in the items in the semi-structured interview form and applied to 9 students in the experimental group for a total of 35 minutes on a voluntary basis. In order to conduct semi-structured interviews, students were selected from groups whose academic achievement levels were determined according to the scores they got from the algebraic expressions achievement test. The data were coded separately by the researchers and Miles and Huberman's percent agreement formula (Miles, Huberman, & Saldana, 2014) was used to determine the reliability. According to the formula used, the percentage of agreement between the coders was calculated as 87.34.

2.4. Data Collection and Analysis

The research data were obtained from 42 students in the 6th grade of a public secondary school in the province of Rize in the second term of the 2022-2023 academic year. The researcher carried out the application. In the experimental group, web 2.0 teaching activities, which were prepared by considering certain acquisitions related to algebraic expressions in the 6th-grade textbook of MEB, were applied for 5 lesson hours. While preparing these activities, the Ministry of National Education's 6th-grade mathematics textbook and Education Information Network (EBA) were used. In the control group, the lessons were taught as specified in the curriculum. At the end of the study, the achievement test and the attitude scale were applied as a pre-test and post-test in order to measure the knowledge levels of the experimental and control groups about the objectives aimed to be gained, and the effects of the two methods on their achievements and attitudes were examined. In addition, opinions were determined by applying a semi-structured interview form to get opinions about web 2.0 tools applied to the experimental group. SPSS 21 package program was used for data analysis. In the achievement test prepared to determine the achievement test scores of the students, "1 point" for each question with the correct answer to each question and "0 points" for the answer to the wrong or blank question were entered into the package program. To check the equivalence of the experimental and control groups, the 5th-grade mathematics course grade point averages were checked. The data obtained from the achievement test was used to determine whether there was a significant difference between the achievement test average scores of the groups using the t-test in the experimental and control groups. The data obtained by conducting semi-structured interviews with nine students from the experimental group were analyzed according to content analysis. The qualitative data obtained were read by two independent coders, and common themes were created by making individual coding. Frequencies and percentages related to these themes were calculated.

3. FINDINGS

In this part of the study, the findings obtained from the study are included. The findings of the research and the interpretations of these findings are given below.

3.1. Findings and Comments on Algebraic Expressions Achievement Test (CIBT)

In this section, "Does using web 2.0 tools in algebra teaching affect students' algebra success?" In order to get an answer to the research problem, first of all, the Algebra Achievement Test (CIBT), developed by Okuducu (2020) in his master's thesis, was applied as a pre-test to the experimental and control groups before starting the application. Thus, "Is there a significant difference between the pre-test scores of the students in the control and experimental groups?" An answer to the sub-problem was sought. The students' pre-test scores were examined and compared with the t-test. The t-Test Results for the Resulting Algebraic Expressions Achievement Test (CIBT) Pre-Test are shown in Table 2.

Table 2. t-test results for experimental and control group CIBT pre-test

Groups	N	X	t	sd	p
Experiment	22	23,00	1,288	14	,219
Control	20	18,60			

From Table 2, as a result of the pre-test, the mean scores of the students in the experimental group were 23.00 and the mean of the control group was 18.60. Thus, it was determined that there was no significant difference between the experimental group and the control group in terms of achievement pre-test scores ($t(14)= 1.288$; $p>0.05$).

At the end of the application process, the t-test was applied to determine whether there was a significant difference between the post-test scores of the students in the experimental and control groups. The results obtained are given in Table 3.

Table 3. t-test results for the experimental and control groups CIBT post-test

Groups	N	X	t	sd	p
Experiment	22	27,6	2,197	14	,045
Control	20	22,4			

Looking at Table 3, the average of the students in the experimental group was 27.6 and the average of the control group was 22.4. A significant difference was determined between the experimental group and the control group in terms of achievement post-test scores, and it is seen that this difference is in favor of the experimental group ($t(14)=2.197$; $p<0.05$). Using web 2.0 tools in algebra teaching positively affects students' success.

3.2. Findings and Comments on the Attitudes Towards Mathematics Lesson Scale (MDKTÖ)

In this section, "Does the use of web 2.0 tools in algebra teaching affect students' attitudes towards mathematics?" In order to find an answer to the problem, the Attitude Scale Towards Mathematics Lesson (MDKTÖ) developed by Baykul (1990) was applied to the experimental and control groups as a pre-test before the application process. The pre-test results of the students were analyzed with the t-test. The results of the findings of the MDKTÖ pre-test of the experimental and control groups are given in Table 4.

Table 4. The t-test results of the experimental and control groups for the MDKTÖ pre-test

Groups	N	X	t	sd	p
Experiment	22	120.24	,043	14	,966
Control	20	118.06			

When Table 4 is examined, the average of the students in the experimental group is 120.24 and the average of the control group is 118.06. It was determined that there was no significant difference between the experimental and control groups in terms of MDKTÖ pre-test scores. t(14)=-.043; p>0.05). Therefore, it was determined that the pre-attitudes of the two groups were at the same level.

The results obtained from the t-test for the experimental and control group's posttests on MDKTÖ are presented in Table 5.

Table 5. t-test results for the experimental and control group MDKTÖ posttests

Groups	N	X	t	sd	p
Experiment	22	125.24	1,552	17	,010
Control	20	118.34			

As a result of the examination of DG and CG's posttests on MDKTÖ by examining Table 5, the average of the students in the control group was found to be 118.34 and the average of the experimental group was found to be 125.24. It is obvious that there is a significant difference from the results of the findings and this difference is in favor of the experimental group (t(17)=1.552; p<0.05).

3.3. Findings and Comments on the Semi-Structured Interview Form

In this part of the research, the findings related to the data analysis obtained from the semi-structured interviews conducted with nine students from the experimental group are included. Table 6 shows the answers given by the experimental group students to the semi-structured interview questions and the frequency and percentage values of these answers in order to seek an answer to the question of the research, "What are the opinions of the experimental group students at the end of the application of using web 2.0 tools in teaching algebra?"

Table 6. Frequency values and percentages of semi-structured ınterviews

Semi-Structured Interview	*Answers Given*	*f*	*%*
1. Do you think positively about using web 2.0 tools in teaching algebra? If so what is it?	It makes the lesson fun.	7	85
	I entered the class with enthusiasm.	7	85
	I learned more.	6	70
	I understood better.	6	70
	We learned with friends.	2	30
	I found out by myself.	2	30
	More solution-oriented	1	15
	An activity-packed lesson	1	15
2. Do you have any opposing thoughts about using web 2.0 tools in teaching algebra? If so what is it?	I have no negative thoughts.	7	85
	There is much noise when doing some activities.	1	15
	The lesson seems very simple.	1	15
3. Would you like to use web 2.0 tools while studying other mathematics subjects Why?	Yes, I would.	5	60
	I do not want. The current processing style is more	1	15
	I enjoy.	3	40
	Very fun and beautiful	5	60
	I am learning better.	5	60
	It interests me more.	1	15
	Subjects are closer to life	2	30
4. Is there an essential difference between the courses taught with web 2.0 tools and those with other methods? If so, what is the difference?	I don't think so.	1	15
	Lessons are learned more fun.	6	70
	Topics stay in my mind.	7	85
	The lesson is more exciting and intriguing	3	40
	I tried to find the topics myself with the questions asked.	1	15
5. Has the use of Web 2.0 tools affected your attitude towards mathematics?	Yes, it affected me a lot.	7	85
	No, it didn't affect me much.	1	15
	I loved math class, I started to like it more.	6	70
	I didn't like the math lesson very much, it made me love it even more.	2	30

In Table 6, 85% of the students who participated in the interview stated that they enjoyed the courses taught with web 2.0 activities in teaching algebra. About using Web 2.0 tools, 85% of students say the lessons are fun, 85% say they enjoyed the lesson, 70% said they understood more and better, 30% said I learned by finding myself, we learned together with friends, solution-oriented and full of activity 15% of the students who say a course. In addition, it is seen that web 2.0 activities used in algebra subjects positively affect students' attitudes towards mathematics lessons by 85%. In addition, 85% of the students stated that they wanted web 2.0 activities to be used in other subjects of the mathematics course. Table 6 shows two students who expressed negative thoughts about web 2.0 activities used in algebra subjects. 15% of the students stated that there was much noise during the activity, and 15% found that the lessons were handled in this way at an elementary level. In addition, the number of students who want to avoid using web 2.0 tools while studying other subjects in mathematics is 1. In this study, only some students who learned through web 2.0 activities used in

algebra subjects used negative expressions. Most students stated that the lessons were memorable, they learned more, they learned better, they learned together with their friends, the lessons were engaging, they were fun, and they produced something themselves.

4. DISCUSSION and CONCLUSION

The advancement of technology and science has also expanded the application areas of mathematics. For this reason, it is necessary to raise a sound generation that will have a say in the world of the future. Students should be able to see the mathematical problems they encounter from different perspectives, develop different ideas, and generalize and apply these ideas instead of simple calculations. It is known that mathematics has an essential effect on the development of thinking (Kükey, Aslaner & Tutak, 2019). Students will be able to solve mathematical problems and benefit from these methods by learning the learning sub-field of algebra, which affects the entire mathematics curriculum, meaningfully and permanently. In this study, the effect of using web 2.0 tools in algebra teaching on student achievement and attitude was examined, and significant results were obtained using the findings related to the sub-problems of the research.

When the results of the achievement test and attitude test applied to both groups on algebraic expressions after the application are examined, it is seen that there is a significant difference in favor of the experimental group between the achievement test scores of the students in the experimental group, where web 2.0 tools were used in algebra teaching, and the students in the control group. In other words, it was seen that the experimental group students were more successful and had more positive attitudes than the control group students. In the light of this method, the experimental group students learned by constructing their concepts about algebraic expressions. With the activities prepared for the stages of this model, the students experienced concrete experiences and made a better sense of the abstract concepts in their minds. In parallel with this study; (Kibar, 2006; Tüysüz & Aydın, 2007; Tüysüz & Çümen, 2016) revealed that the use of web 2.0 tools in algebra teaching is an effective method in increasing both success and attitude.

Semi-structured interviews with nine students selected from the experimental group revealed that the lessons taught with the use of web 2.0 tools in algebra teaching were more fun and exciting, it increased the motivation of the students, the concepts were learned concretely, the students were more active in the lessons, the lessons were more permanent, and the students were more resistant to the mathematics lesson. Found to have a positive effect on their attitudes. As a result of the use of web 2.0 tools in algebra teaching, it was seen that 85% of the students liked the mathematics lesson more. As a result of the semi-structured interviews, it was concluded that the majority of the students approached the lessons taught with the activities of web 2.0 tools in algebra teaching positively, and they wanted other subjects of the mathematics course to be processed appropriately by the web 2.0 tools in the teaching of algebra; Hangül and Üzel, (2010) found similar findings with this study in their study. The results obtained to support this study.

In light of the results obtained within the scope of this research, the following suggestions were made:

Seminars should be given to teachers to introduce web 2.0 tools used in education.

The preparation phase is critical in technology-supported teaching. For this reason, activities should be prepared within the framework of a good lesson plan and a lesson plan before the lesson.

Preparing events using Web 2.0 tools can be time-consuming. For this reason, books that guide teachers and contain ready-made activities should be prepared.

Existing educational software should be developed considering scientific findings and valuable and practical new software should be developed.

Teaching methods with web 2.0 tools can be used to increase students' success in different mathematics subjects.

The problems teachers face and may encounter during teaching supported by Web 2.0 tools should be examined.

The effects of two different teaching environments on attitude and achievement were examined in the study. Research can be improved by increasing the number of dependent and independent variables.

This research was conducted with 6th-grade students in a secondary school with a limited study group. Similar studies can be applied to students at different grade levels. The study can be improved by increasing the number of schools and subjects.

Ethics Committee Decision

This research was carried out with the permission of Fırat University Social and Human Scientific Research and Publication Ethics Committee with the decision numbered 14949-2023/04 dated 09.03.2023.

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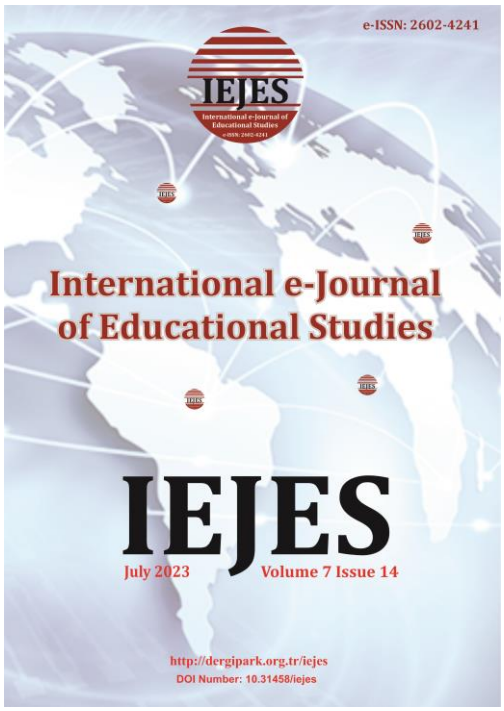

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Abstract

This study aimed to investigate the effects of a self-esteem development program on middle-school students in the seventh grade. The study included 21 students with low self-esteem, of which 11 were in the experimental group and 10 were in the control group. After identifying the participants, the researcher implemented an eight-session program, each session lasting 90 minutes on average, for the students in the experimental group. Non-parametric Mann-Whitney U test was used to determine whether there was a significant difference between the pre-test and post-test score averages of the experimental and control groups. Non-parametric Wilcoxon Signed Ranks test was used to determine whether there was a significant within-group difference between the pre-test and post-test scores of the experimental and control groups. The results indicate that the self-esteem scores of the students in the experimental group, who participated in group activities, increased. There was no change in the self-esteem scores of the students in the control group. The results of the study were discussed and interpreted in light of the relevant literature.

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Research Article

A Group Counseling Practice for Improving Middle-School Students' Self-Esteem [*]

Özlem ÇAKMAK TOLAN [1]

Abstract

This study aimed to investigate the effects of a self-esteem development program on middle-school students in the seventh grade. The study included 21 students with low self-esteem, of which 11 were in the experimental group and 10 were in the control group. After identifying the participants, the researcher implemented an eight-session program, each session lasting 90 minutes on average, for the students in the experimental group. Non-parametric Mann-Whitney U test was used to determine whether there was a significant difference between the pre-test and post-test score averages of the experimental and control groups. Non-parametric Wilcoxon Signed Ranks test was used to determine whether there was a significant within-group difference between the pre-test and post-test scores of the experimental and control groups. The results indicate that the self-esteem scores of the students in the experimental group, who participated in group activities, increased. There was no change in the self-esteem scores of the students in the control group. The results of the study were discussed and interpreted in light of the relevant literature.

Keywords: Self-esteem, group counseling, middle school, students

1. INTRODUCTION

Self-esteem is defined as a person's general sense of self-worth and acceptance or the perception of how much people value themselves (Harter, 1990). Branden (2001) notes that self-esteem has two aspects: personal competence and worthiness. Taylor, Peplau, and Sears (2007) defined self-esteem as the sum of an individual's beliefs about the self. Rosenberg (1965) defined self-esteem as one's positive or negative attitude toward the self. High self-esteem refers to a positive general evaluation of the self, whereas low self-esteem refers to negative thoughts and feelings about one's self-worth. Self-esteem is a part of our personality and has two elements: Self-knowledge and self-awareness. These elements include individuals' perceptions about themselves, their strengths and weaknesses, attitudes, abilities, and values (Baumeister, Campbell, Krueger, & Vohs, 2003).

Children become aware of their characteristics through their communication with adults and peers. Among developmental periods, adolescence is a critical period in terms of self-awareness. However, it is treated as a transitional period between childhood and adulthood. In this context, notably, the transition from primary to middle school is also a challenging and stressful period for children. The middle-school period, which corresponds to the pre-adolescence years, is risky because of the decrease in the self-esteem of adolescents in this age group (Striegel-Moore, 2001). Early implementation of self-esteem development programs can have beneficial results. Self-esteem is a complex milestone concept that is fundamental in personality development. Although an individual's basic personality begins to form at an early age, research indicates that self-esteem may change,

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deteriorate, or decrease, especially during pre-adolescence (12–13 years old) (Cantin & Boivin, 2004). Therefore, a self-esteem enhancement program was implemented with students of this age range as part of the research.

Research has determined that self-esteem is positively related to happiness, life satisfaction, self-confidence, sociability, and optimism (Yang, Tian, Huebner, & Zhu, 2019). Meanwhile, low self-esteem in childhood is negatively associated with negative thoughts; avoidance of new experiences; difficulty in managing conflicts (Khullar & Tyagi, 2014); loneliness (Luo, Liu, & Zhang, 2020); suicide attempts (Barrera, Montoya-Castilla, Pérez-Albéniz, Lucas-Molina, & Fonseca-Pedrero, 2020); anxiety (Pyszczynski, Greenberg, Solomon, Arndt, & Schimel, 2004); and behavioral problems (Weels, Hunnikin, Ash, & Goozen, 2020). Results show that high self-esteem works as a buffer against mental disorders emerging from one's childhood (Ahn & Fedewa, 2011). Researchers suggest that high self-esteem protects against stressful situations and that it reduces the negative consequences of stress (McGee, Williams, & Nada-Raja, 2001). Further, self-esteem developed at an early age has a strong influence on the formation of psychological resilience and well-being later in life (Orth, Robins, & Roberts, 2008).

Low self-esteem manifests itself in the daily lives and behaviors of children and adolescents. Children and adolescents with low self-esteem may blame themselves, have low self-confidence, and have negative thoughts about themselves. Yahaya et al. (2004) stated that individuals with low self-esteem present characteristics such as avoiding competition, not taking initiative, being pessimistic, lacking self-confidence, and facing difficulties in decision-making. Children and adolescents must enhance their self-esteem for their psychological well-being and to form positive emotions such as self-confidence, responsibility, and feeling lovable and valuable in the future. Adolescence is an appropriate period for interventions to be made for the formation of a healthy self-perception. Therefore, the study aims to aid middle-school students through a group counseling practice involving psychological counseling and guidance to increase their self-esteem.

There are several group counseling practices aimed at increasing self-esteem. Steese, Dollette, Phillips, and Hossfeld (2006) conducted a group study with 13-year-old female students in experimental and control groups for 10 weeks. Practices related to topics such as friendship relations, self-image, body image, and assertiveness were performed in these sessions. In the measurements made at the end of 10 weeks, there was an increase in the self-esteem, self-efficacy, self-confidence, body image, and social support scores of the students in the experimental group.

Multiple studies have concluded that intervention programs aimed at enhancing self-esteem are effective. Trumbull (1987) applied group counseling to improve students' self-esteem. He formed experimental and control groups with eight participants; the students in the experimental group engaged in practices related to self-esteem, communication, interpersonal relations, self-discipline, and values for 12 weeks. Resultantly, the self-esteem scores of the students in the experimental group were found to increase. Tanksley (1994) found that students' self-esteem increased after engaging in a program created for fifth-grade students with low self-esteem. Kaya and Saçkes (2004) found a significant increase in the self-esteem levels of middle-school students with low self-esteem in the eighth grade by engaging in an intervention program. Akbari, Mohamadi, and Sadeghi (2012) study with 40 female students in experimental and control groups showed that assertiveness training had positive results on the increase of students' self-esteem and self-confidence. Thus, the self-esteem development programs implemented are mostly applied to adolescent groups and the results are positive.

Group work is effective for intervention programs aimed at developing healthy self-esteem. Corey (1990) found that group counseling is particularly suitable for adolescents. Smead (1990) emphasized that group counseling provides an appropriate environment for young people to acquire new behaviors and that children learn and socialize in groups. Group and individual friendships are

critical in the lives of adolescents. Through such groups, adolescents learn about social rules, socialize, meet their psychological needs, and assert their existence. Group counseling practices help adolescents share their problems; realize that they are not the only ones experiencing these problems; and reduce their feelings of helplessness, hopelessness, and loneliness.

Therefore, researchers believe that group counseling practices designed within the framework of certain objectives could have positive results in raising middle-school students' self-esteem. The program prepared for middle-school students presented in this study aimed to raise students' self-esteem. The study tested the following hypotheses:

1. The posttest scores obtained from the self-esteem scale of the students in the experimental group participating in the group counseling practice will be statistically higher than the posttest scores of the students in the control group from the self-esteem scale.

2. The distribution of the post-test scores obtained from the self-esteem scale of the students in the experimental group participating in the group counseling will be significantly higher than the distribution of the pre-test scores.

2. METHOD

2.1. Research Design

A quasi-experimental study was conducted with pretest, posttest, and experimental-control groups, aiming to examine the effect of group counseling practices on the self-esteem of middle-school students. In cases where the controls cannot be provided as required by real experimental models, quasi-experimental designs are used (Karasar, 2016). The study's design was that of a pretest/posttest model (2×2) with experimental and control groups, and the Rosenberg Self-Esteem Scale was administered to the experimental and control groups as a pretest before starting the study. In the next stage, the experimental group participated in a self-esteem development program, consisting of eight sessions; the control group underwent no intervention. At the end of the program, the Rosenberg Self-Esteem Scale was re-administered to the experimental and control groups as a posttest.

2.2. Research Group

The research group consists of 13-year-old secondary school students (the experimental group comprised six girls and five boys and the control group comprised five girls and five boys) studying in the seventh grade in the central Kayapınar district of Diyarbakır province in Türkiye. For participants' selection, the Rosenberg Self-Esteem Scale was administered to 258 seventh-graders. After the evaluation, students with low self-esteem scores were interviewed individually through the school counseling service. In the preliminary interview based on the principle of volunteerism, students received information about the duration, process, and confidentiality of group counseling. In the school in question, eighth-graders were preparing for their high-school exam and fifth-graders were considered likely to experience adaptation problems as beginners at the middle-school level; therefore, these grades were excluded from the program.

2.3. Data Collection Tools

2.3.1. Personal information form:

A personal information form was used to collect demographic information such as gender, grade level, and age.

2.3.2. Rosenberg self-esteem scale:

The scale developed by Rosenberg (1965) to measure self-esteem is in English. It was adapted to Turkish by Çuhadaroğlu (1986) and consists of 63 items and 12 subscales. The subscales are self-esteem, continuity of self-concept, trusting people, sensitivity to criticism, depressive affect, daydreaming, psychosomatic symptoms, feeling threatened in interpersonal relationships, ability to participate in discussions, relationship with parents, relationship with father, and psychic isolation (Çuhadaroğlu, 1986). Our study used the 10-item self-esteem subscale. There is no time limitation in

applying the scale to adolescents. The responses for the self-esteem subscale range from very true to very false. For items 1, 2, 4, 5, and 7, the scores are very true: 4, true: 3, false: 2, and very false: 1, and that for items 3, 5, 8, 9, and 10 are very true: 1, true: 2, false: 3, and very false: 4; the scores one can obtain from the scale range between 10 and 40. In the validity and reliability study of the scale in Türkiye, the validity coefficient was found to be .71 and the reliability coefficient as .75.

2.4. Data Analysis

The data obtained within the scope of the research was analyzed using the IBM SPSS-22 program. Mean and standard deviation values were used in the analysis of descriptive data. Non-parametric Mann- Whitney U test was used to determine whether there was a significant difference between the pre-test and post-test score averages of the experimental and control groups. Non-parametric Wilcoxon Signed Ranks test was used to determine whether there was a significant within-group difference between the pre-test and post-test scores of the experimental and control groups.

2.5. The Process

The planning and creation of the group process occurred in stages. The Rosenberg Self-Esteem Scale was applied to 258 volunteer seventh-grade students in accordance with the wishes of the students and parents who applied to the school guidance service and the observations of the school counselor in the middle school in the central Kayapınar district of Diyarbakır province in Türkiye. After the evaluation, individual interviews were conducted with students with low self-esteem scores.

In the preliminary interview based on the principle of volunteerism, students received information about the duration, process, and confidentiality of group counseling. The student's parents also received information about the group counseling process. In the next stage, students and parents who volunteered for the study provided informed consent and parental permission statements. The school in which the study took place received a briefing about the group counseling process and gave institutional permissions. Ethical principles and legal processes were followed, and participants' confidentiality was protected. After the preliminary interview, 21 students volunteered to participate in the study. These students were randomly assigned to two groups based on a draw. Then, these two groups were randomly classified as experimental and control groups through another draw. The researcher ensured that there were 10 and 11 volunteers in the experimental and control groups, respectively. These numbers of participants were deemed sufficient for the group process in this study. Group sessions were held outside of class hours (once a week for 90 minutes) in the seminar room of the school where the research was conducted. For ensuring the internal validity of the experimental study, the members of the experimental and control groups were selected from different classrooms so as not to affect the results of the experimental procedure to minimize communication between the experimental and control groups. The group counseling program conducted in this study aimed to increase self-esteem in middle-school students, and various sources were used to create this program and design its activities (Sır, 2022). Further, Büyüköztürk, Kılıç-Çakmak, Akgün, Karadeniz, and Demirel (2008) study was taken as a reference to choose the method of analysis. Before conducting the program with the experimental group, the researcher consulted two experts with doctoral qualifications in the field of guidance and counseling.

2.6. Intervention Plan

Session 1: The session started with the group members and the leader sitting in a circle. In an introductory activity, the group leader asked the students to find a positive adjective for themselves with the initial letter of their names and to introduce themselves. After all the students introduced themselves, they were asked to say the adjectives and names of their groupmates, in turn, to get to know each other positively. Group members were asked to introduce themselves each time they took the floor. Group rules were established with the members. The group leader distributed emotions cards

and explained the names of emotions and how they can be felt in different intensities. The leader asked the students to relate the emotions on the emotions card with their experiences and emphasized the importance of sharing emotions in healthy ways.

Session 2: After the group leader asked how the students spent the week and how they were doing, they presented a summary of the previous week's session. The leader asked students to write down the characteristics they liked and disliked about themselves on a worksheet. Students formed pairs, and they were asked to read the characteristics they had listed with the phrase "I am...." Students performed activities on topics such as describing a situation in which they felt successful, the things they would like to change about themselves, and the importance of accepting themselves as they are with their positive and negative characteristics. At the end of the session, the group leader asked the students to describe themselves with three positive sentences, and they ended the session.

Session 3: After the group leader asked how the students spent the week and how they were doing, they presented a summary of the previous week's session. Activities were carried out on topics such as the importance of students expressing themselves, using body language, making sentences using I-language and you-language, and listening without being judgmental. Role-playing activities were carried out on topics such as expressing ourselves in interpersonal relationships and effective listening.

Session 4: The leader explained the concept of roles to the students and discussed the different roles in our lives, such as student, son/daughter, friend, nephew, niece, and team member, and that we may not be able to fulfill every one of our roles well. Students were provided a Role Questionnaire and asked to express how they feel about their roles as student, friend, and individuals and their thoughts about these roles.

Session 5: The aim was to show students the importance of setting learning goals for developing self-esteem. Various activities were carried out with the students on topics such as what kind of a student they want to be, how they can create goals, what they can do to achieve these goals, and what they need. The leader asked the students where and how they would like to see themselves after one year.

Session 6: In this session, the group leader carried out practices on topics such as improving social relations, developing a sense of self-confidence in social environments, and developing the ability to say no and be assertive. The students were divided into groups of two and given topics such as being forced by a friend to do something you do not want to do and forgetting to go to an appointment. They were asked to act in sociable and timid roles. At the end of the role-play, there was a group interaction on dimensions such as how students felt and what they thought.

Session 7: This session was focused on creating goals for students to feel better about themselves emotionally and physically and to build healthy friendships. Through the ABC model, students performed activities on examples related to the dimensions of a situation, thought, and emotion. Emphasizing that the main factor that constitutes our emotions, regardless of the situations experienced, is the dimension of thought, activities were carried out on the idea that if we can change what we think about ourselves in any situation we experience, our emotions can also change. Further, students engaged in activities to recognize perfectionist thoughts and to understand that being perfect is not possible or realistic.

Session 8: An evaluation of the work conducted in the group environment in the previous seven sessions was conducted. There were discussions regarding students' learnings about the aspects they liked and disliked about themselves, the roles they have and how not all roles can be equally liked, their goals as students, how it is not possible to be perfect, and so on. There was also a conversation about what the students learned from the activities and how the end of the group process affected them. Group members were asked to say goodbye to each other with positive sentences, and the group process ended.

3. FINDINGS

The results of the descriptive and normality analysis of the data obtained within the scope of the research are presented in Table 1. As seen in Table 1, the pre-test score averages of the participants in the experimental group were determined as X = 21.63 (SD = 1.74), and their post-test score averages were determined as X = 31.54 (SD = 3.50). The pre-test score averages of the participants in the control group were determined as X = 20.60 (SD = 1.34), and their post-test score averages were determined as X = 20.90 (SD = 1.57).

Table 1. Descriptive and normality analysis results of pre-test and post-test data of experimental and control groups.

	Experimental Group		Control group	
	Pre-test	Post-test	Pre-test	Post-test
N	11	11	10	10
X	21.63	31.54	20.60	20.90
Ss	1.74	3.50	1.34	1.57
Skewness	.54	1.62	-.77	-1.07
Kurtosis	.20	2.58	-.12	2.90

To examine the difference between the pre-test score averages of the experimental and control groups, a non-parametric Mann-Whitney U test was applied. The findings regarding the analysis results are presented in Table 2.

Table 2. Non-parametric Mann-Whitney U test results for the pre-test data of the experimental and control groups

	Group	N	X_{order}	$\sum_{order}$	U	Z	p
Pre-test	Experimental	11	12.59	138.50	37.50	-1.26	.22
	Control	10	9.25	92.50			

When Table 2 is examined, it is determined that there is no significant difference between the pre-test data score averages of the participants in the experimental and control groups (Z = -1.26, p > .05). A non-parametric Mann-Whitney U test was applied to examine the difference between the post-test score averages of the experimental and control groups. The findings regarding the analysis results are presented in Table 3.

Table 3. Non-parametric Mann Whitney-U test results for the post-test data of the experimental and control groups.

	Group	N	$X_{sıra}$	$\sum_{sıra}$	U	Z	p
Post-test	Experimental	11	16.00	176.00	.000	-3.89	.00*
	Control	10	5.50	55.00			

$*p<.05$

When Table 3 is examined, it is determined that there is a significant difference between the mean scores of the post-test data of the participants in the experimental and control groups (Z = -3.89, p < .05). The mean scores of the post-test data of the participants in the experimental group (X = 31.54) were found to be higher than those of the control group (X = 20.90). Therefore, the first hypothesis of the research, "The post-test scores of the students in the experimental group participating in the group counseling practice from the self-esteem scale will be statistically higher

than the post-test scores of the students in the control group from the self-esteem scale" has been confirmed.

Non-parametric Wilcoxon Signed-Ranks test was applied to compare the pretest and post-test mean scores of the participants in the experimental group. The findings of the analysis results are presented in Table 4.

Table 4. Results of non-parametric Wilcoxon Signed-Ranks test for pre-test and post-test data of the experimental group.

	Measurement	*N*	X_{order}	$\sum_{order}$	*Z*	*p*
Experimental Group	Positive order	11	6.00	66.00	-2.96	.00*
	Negative order	0	0.00	0.00		
	Equal	0				

When Table 4 is examined, a significant difference is found between the pre-test and post-test scores of the participants in the experimental group (Z = -2.96, p < .05). It is observed that the average scores of the pre-test data (X = 21.63) of the participants in the experimental group are lower than the average scores of the post-test data (X = 31.54). Therefore, the second hypothesis of the research, "The distribution of the post-test scores of the students in the experimental group participating in the group counseling practice from the self-esteem scale will be significantly higher than the distribution of the pre-test scores" was confirmed.

Non-parametric Wilcoxon Signed Ranks test was applied to compare the pretest and posttest mean scores of the participants in the control group. The findings of the analysis results are presented in Table 5.

Table 5. Non-parametric Wilcoxon Signed Ranks test results for the pre-test and post-test data of the control group.

	Measurement	*N*	X_{order}	$\sum_{order}$	*Z*	*p*
Control Group	Positive order	3	3.50	10.50	.00	1.00
	Negative Order	3	3.50	10.500		
	Equal	4				

When Table 5 is examined, it is determined that there is no significant difference between the mean scores of the control group's pretest and posttest data (Z = .00, p > .05).

4. DISCUSSION and CONCLUSION

This study examined the impact of a group counseling program for improving self-esteem conducted with middle-school students. The results indicate that the self-esteem scores of the experimental and control groups in the pretest and posttest differed, with the experimental group's scores increasing in the posttest. This study's results uphold the findings of past studies in the area. An examination of the literature from Turkey reveals that although a limited number of studies are aimed at improving self-esteem, the results obtained are positive (Ordu, 2005).

As for research from other countries, psychoeducation programs aimed at supporting students with low self-esteem are based on various theoretical foundations and there are positive results (Steese et al, 2006). McVey, Davis, Tweed, and Shaw (2004) conducted a study on adolescents and determined that a life skills development psychoeducation program was effective in increasing students' satisfaction with their body image and self-esteem. Bozanoğlu (2005) determined that a program based on the cognitive-behavioral approach had a positive effect in increasing the self-esteem of students who lost one academic year and continued to be in high school. Kim (2008) examined the effect of a group psychological counseling program based on reality therapy to reduce internet addiction and increase university students' self-esteem. The study was conducted over five sessions,

with two sessions per week. The results showed that the program based on reality therapy was effective in decreasing students' internet addiction and increasing their self-esteem. Lazaro et al. (2011) aimed to improve social skills and increase self-esteem in adolescents diagnosed with eating disorders through group therapy. They found that group therapy was effective in increasing self-esteem, improving the perception of physical appearance, and increasing the level of happiness in adolescents. Doğru and Peker (2004) applied a self-esteem development program to 16 high-school students, divided into experimental and control groups. The program focused on self-expression, communication, goals, taking responsibility, mutual acceptance, and support. There was a significant increase in the self-esteem scores of high-school students in the experimental group compared to the control group. Similarly, the program implemented in the current study was effective in increasing participants' self-esteem. The evaluation of students' positive and negative characteristics, the importance of accepting themselves as they are in all aspects, communication, effective listening, self-expression, and the activities carried out in the sessions had a positive impact on strengthening self-esteem. Further, activities related to the different roles we have and our feelings and thoughts about these roles, the goals set as students, improving social relations and increasing self-confidence in social environments, developing the ability to say no, being assertive, and understanding the importance of our thoughts on the emergence of our emotions and behaviors are considered useful. The group process was also effective in increasing the self-esteem scores of the experimental group. Group practices have positive effects on interpersonal communication, interaction, modeling, and collaboration (Lukens & McFarlane, 2004). Additionally, factors such as people modeling each other, decreasing the feeling of loneliness, and the coming together of people with similar problems are thought to be effective in the increase in self-esteem scores in the experimental group.

The intervention program developed in this study was conducted with seventh-graders in middle school. Future studies can focus on the effects of group counseling programs for different school levels. Researchers predict that programs for improving self-esteem in primary, secondary, and high-school students will make significant contributions to the psychological well-being of children and adolescents and their mental health in adulthood. In the studies conducted with middle school students, it was seen that they benefited from activities such as active listening, using I language, saying no, expressing their thoughts and feelings in interpersonal relations, and improving their assertiveness skills. In addition to this, various applications have been made on subjects such as the roles of the students, their goals as students, what they can do to achieve these goals and what they need. Based on the finding that the self-esteem levels of the students in the experimental group increased as a result of the study, it is recommended to conduct group studies in secondary school guidance services on subjects such as effective communication, expressing our thoughts and feelings, the roles we have, reaching our goals, and assertiveness education. In addition, it is recommended that school psychological counselors give seminars and training on subjects such as expressing feelings and thoughts appropriately, communicating effectively, and using self-language. In addition, various studies can be carried out for families by school psychological counselors. It is recommended that seminars be given to mothers and fathers on topics such as establishing healthy communication with young people, especially in adolescence, and what healthy and unhealthy child-rearing attitudes are. The lack of follow-up measurements in the current study is considered a limitation of the research. The follow-up measurements, which were planned to be taken a few months after the end of the group program, could not be made due to the earthquake in Kahramanmaraş on 06.02.2023 and the closure of schools.

Ethics Committee Decision

This research was carried out with the permission of DicleUniversity Social and Human Scientific Research and Publication Ethics Committee with the decision numbered E-14679147-663.05-391910 dated 14.11.2022.

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