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Identifying the Careless Responders: A Cross-Country Comparison on PISA 2018 Dataset

Dikkatsiz Yanıtlayıcıların Belirlenmesi: PISA 2018 Verisinde Ülkeler Arası Bir Karşılaştırma[1]

Başak ERDEM-KARA[2]

Abstract

Careless responding (CR) is one of the major concerns in self-report measures since it affects the quality of collected data. In this research, it was aimed to examine the dataset in terms of CR, to investigate the effects of CR on the psychometric properties of data, and to examine the effectiveness of CR detection methods in a cross-cultural context. Specifically; response time, outlier and long-string indices were used to flag CR and efficiency of using these were compared on PISA 2018 reading related attitude scales for Singapore and Turkey. As a result, it was indicated that the amount of CR was higher for Singapore than Turkey at long-string and response time methods. Furthermore, after removal of CR from dataset, enjoyment level of reading, perception of competence and perception of difficulty of PISA tests scores increased. Another result was that long-string and response time analyses provided significant improvement in model fit and long-string had the highest improvement level. Moreover, removing respondents according to outlier analyses didn't provide any improvement on model-data fit. In general, results illustrated that careless responding behavior may have important effects on psychometric properties of self-report and screening the data for CR is strongly suggested in future studies.

Öz

Dikkatsiz yanıtlama davranışı (DYD), öz-bildirime dayalı araçlarla toplanan verilerin niteliğini etkilemekte, bu nedenle bu araçları kullanan araştırmacılar için temel endişe kaynaklarından biri olmaktadır. Bu araştırma kapsamında, verileri dDYD bakımından incelemek, dikkatsiz yanıtlayıcıların verinin psikometrik özellikleri üzerindeki etkilerini araştırmak ve dikkatsiz yanıtlama davranışı gösteren bireyleri saptamada kullanılan yöntemlerin etkililiğini incelemek amaçlanmıştır. Bu doğrultuda; cevaplama süresi, uç değer ve uzun seri (log-string) yöntemleri kullanılarak dikkatsiz yanıtlayıcılar belirlenmiş ve bu yöntemleri etkililiği, Singapur ve Türkiye için PISA 2018 okumayla ilgili tutum ölçek verileri üzerinde karşılaştırılmıştır. Sonuç olarak, DYD miktarının Singapur için uzun dizi ve yanıt süresi yöntemlerine göre Türkiye'den daha yüksek olduğu belirtilmiştir. Ayrıca, dikkatsiz cevaplayıcıların veri setinden çıkarılmasının ardından, PISA testlerinden alınan okuma zevki, yeterlilik algısı ve zorluk algısı puanları artmıştır. Diğer bir sonuç ise, uzun dizi ve tepki süresi analizlerinin model uyumunda önemli iyileşme sağladığı ve uzun dizi yönteminin en yüksek iyileştirme düzeyine sahip olduğudur. Öte yandan, aykırı değer analizlerine göre yanıtlayanları işaretlemek ve veriden çıkarmak, model-veri uyumunda herhangi bir gelişme sağlamamıştır. Genel olarak, çalışma sonuçları dikkatsiz yanıtlama davranışlarının öz-bildirim verilerinin psikometrik özellikleri üzerinde önemli etkileri olabileceğini göstermiş ve ileriki çalışmalarda verinin bu bağlamda incelenmesinin önemi vurgulanmıştır.

INTRODUCTION

Self-report measures are widely used by researchers in many areas of social and psychological research. Those self-report instruments let researchers measure some psychological constructs (such as personality, beliefs, emotions, attitudes etc.) of lots of respondents in a short time (Alarcon & Lee, 2022; Curran, 2015; Ulitzsch et al., 2022). Ideally, it is assumed that respondents carefully read items and select the response reflecting themselves accurately by employing their maximal effort; so that scale scores truly reflect the measured construct (ability, proficiency, attitude etc.). However, this assumption is violated often since respondents, especially the unmotivated ones, may not willingly provide their maximum effort which is necessary to properly process a survey item and give accurate responses consistent with his/her latent trait (Rios & Soland, 2021; Schroeders et al., 2022; Ulitzsch et al., 2022). Datasets from self-report measures are prone to include several errors coming from inaccurate responding, inaccurate coding, or inaccurate computation (Huang et al., 2012). This kind of unmotivated response behaviors are labeled as random, careless, or inconsistent responding frequently in the literature (Alarcon & Lee, 2022).

Meade & Craig (2012) stated that inattentive/careless responding behavior is a major concern in any type of research based on surveys. Similarly, Brühlmann et al. (2020) identified respondents' carelessness as the major factor affecting the quality of data collected in surveys. Neglecting this responding behavior in self-report data, even the amount is small, may severely affect the study results and produce misleading findings since they may influence the measurement of the underlying factors in several ways (Alarcon & Lee, 2022; Bowling et al., 2021; Kountur, 2016; Ulitzsch et al., 2022). Rios et al. (2017) specified that low test-taking motivation of respondents may work as an external factor and make it difficult for responders to accurately demonstrate their skills, abilities or proficiencies being measured, endangering the validity of test-score interpretations. Beck et. al. (2019) stated that results may be affected at both item level and scale level because of inattentive responses which is a type of response bias. It may affect the results by introducing measurement error, weaking the relationship between variables and inflating the Type II errors. Construct-irrelevant variance is introduced to the measurement process and it can negatively influence the psychometric properties of the scale such as item difficulty, item discrimination, test reliability, factor structure etc. Shortly, inattentive/careless responses may potentially weaken the validity of test scores in several ways (Rios & Soland, 2021).

Recognizing the importance of careless responding, researchers and practitioners have shown a growing interest on reasons and effects of careless responses, how to detect and cope with them in order to guarantee the quality of data taken from surveys (Kountur, 2016). There are many different data screening techniques suggested to identify careless responders in the literature with its own advantage and disadvantage based on the situation (number of items, factor structure of the scale, number of subscales etc.). These methods will be discussed in detail later.

Karabatsos (2003) made a comparison of 36 person-fit indices concerning their accuracy of detecting aberrant responses on a dichotomous response scale over several simulated datasets. Person-fit statistics were evaluated with ROC analysis and results showed that in general, HT method performed best when detecting all types of aberrancies. Wise & Kong (2005), made a computer-based assessment and found that response time measure converged significantly with self-report measures and person-fit statistic index. In another study, Johnson (2005) stated that person-fit indices are too stringent, complex and computationally intensive. Meade & Craig (2012) examined different methods on an online questionnaire administration and a simulation. They examined bogus items, consistency indices, response pattern, outlier analysis, response time analysis and self-report measures. They stated that different methods flag different persons. There were two separate patterns of CR namely random and non-random and different indices were required to identify CR on these situations. As minimum screening tools, screening extremely short response times and self-report measure usage were recommended. As a result of simulation, they stated that Mahalanobis D can be an effective indicator of CR, but its power is too much dependent on properties of sample. Another study conducted by Huang et al. (2012) and they compared individual reliability, the psychometric antonyms index, the long-string and response times. They recommended three approaches namely response time, psychometric antonyms and individual reliability in future uses and stated that identification of effective CR methods may help researchers to improve their data quality. Goldammer et al. (2020) investigated the seven popular CR detection index and impact of CR on psychometric properties of constructs. They found that five of these seven indices namely response time per item, personal reliability, psychometric synonyms, psychometric antonyms, and Mahalanobis distance were effective on detection of CR. However, long-string and intra-individual response variability (IRV) were ineffective. In addition, when they examined the effect of CR, they realized that CR inflated item variances, biased item means towards the scale mid-point, increased residual variances of construct indicators. In addition to traditional methods, there are recently proposed more complex procedures suggested to identify CR. For instance, Schroeders et al. (2022) used one of the machine learning algorithms namely gradient boosted tree method (GBM) to identify careless responders and compared its performance with statistical outlier methods, consistency analyses, and response pattern functions. Both a simulation and an empirical study were conducted. As a result, it was shown that gradient boosting machines had performed better than traditional methods in simulation study. However, they stated that this performance of GBM did not transfer to the empirical study. Ulitzsch et al. (2022) proposed a new latent response mixture modelling approach stating that previous approaches are limited since they do not take person/item characteristics into consideration. They stated that traditional approaches identify CR at the aggregate respondent or scale level and they may fail to notice item properties evoking CR such as sentence length, item position, wording etc. Their proposed model allows for CR to vary at the item-by-respondent level. They indicated that their model provided a good parameter recovery and in a simulation data it was good at handling the simultaneous occurrence of multiple types of CR patterns. To examine the agreement of the proposed model and traditional methods, three frequently employed indicators namely

Mahalanobis distance, long-string index, the even-odd correlation, intra-individual response variability (IRV), and time spent on the questionnaire was used. They indicated that Mahalanobis distance and IRV methods had the strongest association with attentiveness, while correlations of long-string index and the even-odd correlation with the model were small. However, there was no substantive correlation with response time with neither attentiveness nor other indicators.

As previously mentioned, there were several studies on careless responding and its identification methods in the literature. However, there is still no clear answer concerning one of the most fundamental problems – detection accuracy of CR identification methods (Goldammer et al., 2020). Although, there are advantages of recently proposed methods such as machine learning algorithms or latent response mixture models. Machine learning algorithms have the disadvantage that they need an extensive training phase and prediction models are restricted to a particular set of items. Because every examination is particularly specific in terms of items and people it examines, generalizations to other data sets, samples, and situations are not conceivable (Schroeders et al., 2022). On the other hand, estimation with latent response mixture model could be quite computationally demanding and take a while (Ulitzsch et al., 2022). However, traditional methods suggested to identify CR have the advantage that they need minimal prerequisites.

In addition to the unanswered questions on CR identification methods, McFerran (2022) investigated CR as a function of respondent, survey and cultural characteristics and found that these characteristics may play a crucial role in careless responding. Grau et al. (2019) also reported that the amount of CR is expected to be higher for people in individualistic countries than in collectivistic countries. Goldhammer et. al (2016) also found that lower country test-taking effort is correlated with lower proficiency levels at the country level. Eklöf et al. (2014) studied on the TIMMS advanced data of Sweden, Slovenia and Norway and observed that Sweden had the lowest level of effort and achievement among those three countries. When students with low-level effort were excluded from dataset there were no significant difference in performance among countries although the difference were significant before the exclusion.

In the context of that study, some common and popular traditional CR detection methods were chosen and compared in cross-country context. This report is organized as follows. Firstly, a theoretical framework for careless responding and methods to identify CR is provided. Secondly, three popularly used and common identification techniques were chosen, studied and compared on a real dataset: PISA 2018 'reading-related attitudes' scale for Turkey and Singapore. Singapore was chosen since it was one of the best performer countries on PISA 2018. Turkey was one of the average performers. PISA scales were implemented in English for Singapore and in Turkish for Turkey sample. Lastly, results of the study were discussed with the related literature.

Careless responding: What is it and how to detect?

As explained before, respondents are expected to give their best while taking a survey; however, that is not the case at most of the time (Huang et al., 2012). Careless responding behaviour may occur when individuals respond to scale items independent of the actual item content. It can be observed when individuals respond without reading the item stem, misinterpret the item stem and/or answer options, be unmotivated to think about the item etc. (Huang et al., 2012; Ward & Meade, 2022). Different terms have been used in the literature to refer this behaviour: 'random response' (Beach, 1989), 'insufficient effort responding' (Huang et al., 2012), 'careless responding' (Meade & Craig, 2012), 'inattentive responding' (Beck et al., 2019), 'disengaged responses' (Soland et al., 2019), 'careless and insufficient effort responding' (Ulitzsch et al., 2022). In the context of this study, the term 'careless responding' with CR abbreviation is preferred.

The prevention of careless responding is not always possible and realistic. So, there is a need to identify careless respondents. Various data screening methods for identifying CR may be classified as priori and post hoc methods (Beck et al., 2019; Meade & Craig, 2012). Priori methods can be defined as the methods that are planned and included in a survey data collection process before the survey is administered. They are often based on some special items or scales assessing whether the respondent is paying attention to the item content or not (Beck et al., 2019). On the other hand, post hoc methods are implemented on collected survey data and they are typically based on calculating a statistic intended to detect aberrant response patterns (Beck et al., 2019; Meade & Craig, 2012). Some popular priori and post hoc methods are explained in the following sections.

A priori methods

Instructed response, bogus and self-report items can be stated as three of the most popular and effective a priori methods to detect CR (Beck et al., 2019; Schroeders et al., 2022; Ward & Meade, 2022). Instructed response items are items constructed to instruct the respondents to select a specific response category (e.g. "For this item, please select strongly disagree"). If respondents choose another response option, they are assumed as careless respondent. On the other hand, bogus items are items with an obvious answer (e.g. 'water is wet' (Gummer et al., 2021)). Respondents are required to be agree or disagree with that statement and failure to select the correct response option is considered as an indication of CR. Lastly, self-report items which are directly asking individuals about their engagement and effort (e.g. 'I put forth my best effort in responding to this survey'; Meade & Craig, 2012). Those items are generally placed at the end of the survey and sometimes known as validity check questions. Although these methods are straightforward and popular, the use of those items are still debateful since their involvement could have some negative spillover effects causing an irritation on participant (Curran, 2015).

Post-Hoc methods

Post-hoc methods are based on some special analyses after the completion of data collection process. There are several post-hoc methods to identify CR and most commonly used ones are consistency indices, response-pattern analysis, outlier analysis and response time analysis (Curran, 2015; Meade & Craig, 2012). Consistency indices use a variety of methods all of which are based on the idea that careless responders tend to provide internally inconsistent responses. For instance, one of the consistency indices is odd-even consistency which is based on the within person correlation across unidimensional subscales formed by splitting up each respondents' responses into even-odd item sets (Schroeders et al., 2022). However, it is not too effective for scales that do not include many items and scales (Niessen et al., 2016). In the context of response-pattern analysis, response pattern functions can be used to identify unusual patterns in either parts or entire response vector of an individual compared to the others. Most commonly used indices are long-string index and intraindividual response variability (IRV). Long-string index are computed by looking at number of times a respondent gave the same response option in a row. Too much choice of a single response option is thought to be an indicator of CR (Meade & Craig, 2012). On the other hand, IRV calculates the inter-item standard deviation across a response vector (Meade & Craig, 2012; Schroeders et al., 2022). There are some more complex procedures of response pattern functions such as person-fit statistics (PFS). PFS examine the probability of getting the observed pattern of responses and can be used to identify aberrant response patterns that deviate significantly from expected ones (Meijer, Niessen, & Tendeiro, 2016; Meijer & Sijtsma, 2001). Poor PFS come up when respondents agree with items that are more extreme while disagreeing with those that are similar to or less extreme. Several indices can be computed and examined in detail from Beck et al. (2019)'s work. Furthermore, the identification and filtering of statistical outliers is defined as one of the most commonly used methods for data cleaning. Multivariate analysis such as Mahalanobis distance consider the entire response patterns across a series of items (e.g. a scale) so they are more appropriate to identify extreme cases than the univariate outlier analysis. Lastly, response time analysis can be used for detection of CR. Response time is the time that an individual spends to respond a set of items and Curran (2015) stated it is perhaps the most commonly used method to eliminate the CR. It is not common that respondents read the item and give her/his reaction seriously when the response time is too short and very short response time is assumed to be an indicator of CR. Huang et al. (2012) suggested a cutoff score for response time that is, a response to an item could be given in more than 2 seconds. On the other hand, Zhang & Conrad (2014) suggested another cut score based on the number of words in the item and stated that 300 msec is required for each word in the item. For instance, if there are 5 words in the item, respondents answering that item less than 1.5 sec are identified as careless.

As can be seen, there are several methods to detect CR and some of most popular ones were explained above. For the detailed review of other methods, you can see Curran (2015) and Meade & Craig (2012). In the context of current study, a priori methods couldn't be used since the used PISA 2018 dataset was taken from OECD website. It is ready to use dataset and researchers have no control on it. Among post-hoc methods; response time, outlier and long-string analysis were used as CR detection methods in this research.

Present study

The main purpose of this study is to evaluate the effects of careless responses identified by different techniques on PISA 2018 scales with a cross-country comparison. Therefore, three of the popular techniques namely response time, long-string and outlier have been used to identify CR among Turkish and Singaporean students on PISA 2018 in the first stage. In the context of this research, answers were sought for the following research questions:

What were the descriptive characteristics of Singaporean and Turkish students on the main dataset?

How was the distribution of careless respondents in Singapore and Turkey according to three different methods?

When respondents were removed from dataset, what kind of changes were observed?

After deleting flagged careless responders, how much improvement in model fit was obtained?

METHOD

Data

Data used in this study were PISA 2018 Student Questionnaire items focusing on measuring reading-related attitudes and data was obtained from OECD website. Due to the nature of the study, informed consent or ethics committee approval was not required.

There were four indicators focusing on individual's reading-related attitudes in total namely; enjoyment of reading, self-concept of reading in two aspects (perception of competence and perception of difficulty) and perception of difficulty of the PISA test. Each of these indicators were investigated separately considering each one of them as a scale in PISA context. The general demonstration and number of items on these fields is summarized in Figure 1 below.

Enjoyment of Reading (5 items)	
Self Concept of Reading (6 items)	• Perception of Competence (3 items) • Perception of Difficulty (3 items)
Perception of Difficulty of the PISA Test (3 items)	

Figure 1. PISA 2018 reading-related attitudes scales

As can be seen in Figure 1, there were 14 items in total each of which have four response categories going through "Strongly disagree", "Disagree", "Agree", to "Strongly agree". There were three items which negatively worded and all of them were on 'Enjoyment of Reading' scale. These items were reverse coded such that higher scores on that scale imply higher enjoyment levels. Scale items were presented in the appendices part in English version.

There were 6676 students from Singapore and 6890 students from Turkey participated in PISA 2018 in total. Before the analysis, dataset was checked for missing values and individuals with missing responses were excluded from dataset by listwise deletion. After removing missing data, analysis continued with 6434 students from Singapore and 6387 from Turkey. 745 students in total (503 from Turkey (7.3%) and 242 from Singapore (3.76%)) were deleted from the dataset.

Careless responding analyses

Response time index. Firstly, response time method was used to identify CR. Response time data is included in the PISA 2018 dataset at OECD website in the file named as 'Questionnaire timing data files'. In the context of PISA, data file includes response time demonstrating the duration that a respondent spends to finish a scale on the related page. So, it can be considered as page time and did not provide an item-level data. For instance, since there are four separate scale presented on four separate pages, there are four separate response time data for each respondent on the file.

In different studies, total scale time indicating the duration between a participant begins and finishes the questionnaire was used as a RT measure. However, there are some debates on the use of total time and some prior studies indicated that total completion time demonstrated poor convergent validity with other CR techniques (Beck et al., 2019). Another index named as 'page time' was proposed by Huang et al. (2012) as an alternative and used in different studies. It is used for multi-page questionnaires and computed by taking the completion time of the scale on that page for each respondent. In the context of that study, 'page time' index was calculated by using 2 seconds rule for each item (Huang et al., 2012). After completing those procedures for each questionnaire on different pages, each record was averaged and 'page time index' was obtained.

Long-string analysis. Another method used to identify careless respondents was long-string analysis that was based on the examination of the longest string of identical responses of each individual. In this technique, it is assumed that careless respondents may have potential to choose the same response option to every question. The ones who are responding carefully and with sufficient effort will not select the same option for long periods of times (Curran, 2015). After calculation of longest string values, a cut-off should be carefully determined to determine careless respondents. Curran (2015) suggested a baseline rule that if respondents have a string of identical responses on at least half of the test (greater than or equal to the scale length), they are considered as careless respondents.

Outlier analysis (Mahalanobis distance). Mahalanobis distance across the entire scale was computed in order to identify multivariate outliers and outliers were flagged as CR.

All analyses were conducted in RStudio environment using the careless (Yentes & Wilhelm, 2021) package for outlier and long-string analyses and lavaan (Rosseel, 2011) package for factor analyses. Other parts in the analysis were conducted with the codes written by the researcher.

FINDINGS

Descriptive statistics

Table 1 indicates descriptive statistics for scales on Singapore and Turkey sample. Reverse items (Items 1, 4 and 5 on Scale 1) were recoded such that higher scores mean higher enjoyment of reading. Besides, as indicated above, missing values were excluded from dataset before the analysis. Values on Table 1 are based on the recoded data and remaining students on dataset after removal of missing values.

Table 1. Descriptive Statistics on PISA 2018 Reading Related Attitudes Scales

		S1	S2	S3	S4	Total
Turkey	M	14.92	8.65	6.06	5.80	35.496
	Sd	3.37	1.96	1.85	1.85	4.61
	α	0.80	0.80	0.69	0.70	0.76
Singapore	M	13.01	8.36	6.78	5.79	34.06
	Sd	3.84	1.97	1.85	2.08	4.63
	α	0.88	0.82	0.72	0.87	0.81

M:Mean   Sd: Standard Deviation   α: Cronbach alpha

As shown in Table 1, Turkish students had higher score on average on S1 and S2 subscales than students in Singapore and the difference of scores were significant ($p<.05$) for both subscales. It means that Turkish students' enjoyment of reading and perception of competence was significantly higher than Singaporean students. The only scale that Singaporean students had higher mean value was S3 scale ($p<.05$) and it was about the perception of difficulty. S4 scores that were related to perception of difficulty of PISA tests were very close to each other (TUR: 5.80, SNG: 5.79; $p > .05$). In addition to that, reliability of all subscales was calculated by Cronbach alpha coefficient and greater than 0.69 indicating adequate reliability. Specifically, Singapore data was more reliable than Turkey data on all scales and the difference between reliability coefficients were statistically significant ($p < .05$) through all scales. Besides, stratified alpha coefficient was also calculated for general scale and it was 0.757 for Turkey and 0.81 for Singapore ($p < .05$). It can be said that data taken from Singaporean students was more reliable than Turkish sample both on subscale and general scale level.

Identification of careless respondents

Response Time Analyses. In CR identification based on response time method, threshold value was set on 10000, 12000 and 6000 milliseconds for enjoyment of reading, self-concept of reading and perception of difficulty of the PISA test scales respectively. These thresholds were defined according to the number of items at scale so as to be two seconds for each item. It should be noted that response time measures were taken as the time that respondent spent to complete a scale on one page, not the entire survey, and there was no item-level information on data file. Since response time data in PISA files were given in milliseconds, our thresholds were also given as milliseconds. According to the response time analysis, page index was produced for each country. As can be seen in Table 2 below, 28 students from Turkey and 45 from Singapore spent less than specified cut off values and were flagged as 'careless' (and coded as 0) on all three scales (Page Index=0). On the other hand, 0.33 value of page index indicated that students had spent enough time only on one of the scales and flagged as 'careless' on two of the scales. In the current study, 0.33 was accepted as the page index cut off score to flag individuals as 'careless'. That is, there were 99 (1.6%) careless respondents from Turkey and 156 students (2.4%) from Singapore according to response time analysis.

Long-String Analyses. Lastly, long-string analyses were conducted by setting the cut-off value as 7 since there were 14 items in total. Long-string analyses were made on the original (non-recoded) data since data recoding changes the response pattern. The number of respondents with strings is given in Figure 2 below.

Figure 2 indicated that the longest string was 3 for both countries and it was observed at 2306 respondents from Turkey and 2344 from Singapore. As a cut-off, seven was identified since the scale has 14 items. As a result, it was observed that in total there were 341 and 384 individuals who had a string equal to or greater than seven from Turkey and Singapore respectively and those were coded as 'careless'.
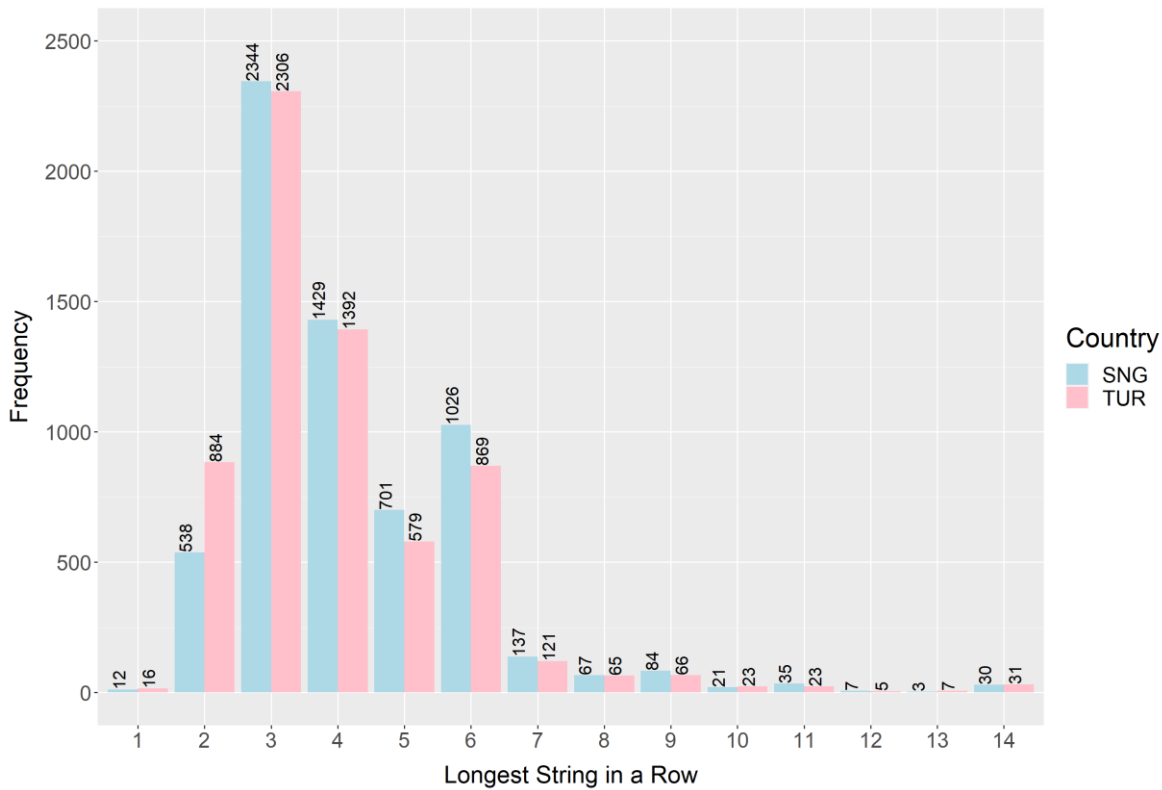
Figure 2. Number of responders with longest string

Outlier Analysis. Multivariate outliers were identified by computing Mahalanobis distances on all items on the scale and flagged as CR. According to the outlier analysis, there were 328 individuals from Turkey and 242 from Singapore required to be excluded from dataset.

Table 2 shows the number of careless respondents at Turkish and Singaporean students according to three different methods.

Table 2. Number of careless responders according to three methods

	Page Index			Outlier	Long-String Index
	0	0.33	Total		
Turkey	28	71	99 (1.6%)	328 (5.1%)	341 (5.3%)
Singapure	45	111	156 (2.4%)	242 (3.8%)	384 (6%)

The second research question was related to the prevalence of careless responding among Turkish and Singaporean students from PISA 2018 reading related attitudes scale. Estimates ranged from 1.6% to 5.3% depending on which IER detection method was applied. The method flagged the largest number of students as careless is long-string for both Turkish and Singapore sample. On the other hand, page index that was computed based on response time data had the lowest number of flagged students. Detection rates were lower on Turkish students' data than in Singapore sample for page-index and long-string but for the outlier analyses it was vice versa. CR rates on two countries were actually not too far from each other for three methods.

In Table 3, the correlations of the students flagged by three different CR methods were presented. Tetrachoric correlation was used for computation since our variables were binary.

Table 3. Correlation between three CR identification methods

	TUR			SNG		
	Response Time	Outlier	Long-String Index	Response Time	Outlier	Long-String Index
Response Time	1.00	0.40	0.59	1.00	0.43	0.59
Outlier		1.00	0.24		1.00	0.14
Long-String Index			1.00			1.00

From Table 3, it can be concluded that correlations between methods were highest between response time and long-string index for both countries (r_{TUR}= 0.59, r_{SNG}=0.59). On the other hand, the lowest correlation was between outlier and long-string methods (r_{TUR}= 0.24, r_{SNG}=0.14). It can be said that correlation between response time-outlier and response time-long string index was in moderate level. Correlation between outlier and long-string methods was in a low level.

Exclusion of Careless Respondents

With CR analyses, careless responders were flagged based on three different methods. After that, flagged students were removed from dataset according to the findings of three CR detection methods. Namely, three different datasets were formed. Descriptive statistics of remaining datasets were presented on Table 4.

Table 4. Descriptive Statistics after Exclusion of CR Flagged Students

			Remaining Dataset				
			S1	S2	S3	S4	Total
Turkey	*Response Time*	*M*	14.95	8.67	6.03	5.86	35.51
		Sd	3.38	1.94	1.82	1.83	4.56
		α	0.80	0.79	0.68	0.70	0.76
	Outlier	M	15.05	8.68	5.99	5.81	35.53
		Sd	3.31	1.89	1.74	1.78	4.46
		α	0.82	0.81	0.69	0.71	0.77
	Long-String Index	M	15.02	8.70	5.98	5.81	35.52
		Sd	3.39	1.92	1.78	1.81	4.47
		α	0.81	0.78	0.66	0.68	0.74
Singapore	Response Time	M	13.01	8.35	6.76	5.89	34.02
		Sd	3.86	1.95	1.82	2.06	4.6
		α	0.88	0.81	0.71	0.86	0.81
	Outlier	*M*	13.09	8.39	6.75	5.86	34.08
		Sd	3.84	1.91	1.79	2.03	4.49
		α	0.89	0.82	0.72	0.88	0.82
	Long-String Index	M	13.08	8.41	6.73	5.84	34.06
		Sd	3.91	1.97	1.84	2.07	4.60
		α	0.88	0.81	0.71	0.87	0.81

When Table 4 was examined, it was realized that with deletion of CR from dataset total scale scores increased a little compared to the whole dataset for Turkey with respect to each of three methods. Similarly, for Singapore, total scale scores did not differ between original dataset and CR excluded dataset with respect to long-string index, increased a little by outlier method and decreased with response time. However, there were no big differences with the main data set. Total scale scores of main datasets were 35.50 for Turkey and 34.06 for Singapore (Table 1). Comparing excluded dataset S1 values with original dataset indicated that mean value of S1, S2 and S4 scores increased with exclusion of CR at all methods. It can be interpreted that careful responders had higher enjoyment of reading, perception of competence and perception of difficulty of PISA tests scores compared to the excluded ones flagged as careless. On the contrary, S3 scores decreased with exclusion of CR at all methods which meant that careful responders had lower score of perception of difficulty compared to careless ones. Reliability values were also compared between excluded and original datasets. Cronbach alpha values were calculated for each scale separately and a stratified alpha value was calculated for whole scale. It was seen that obtained reliability coefficients on excluded datasets was not too far from their counterparts on the original dataset. The noticed point was that exclusion of respondents with respect to long-string index reflected on the dataset negatively in terms of reliability for Turkey dataset. Examinations can be done in more detail by comparing Table 1 and Table 4.

CFA Analyses

After the examination of descriptive statistics, model-data fit was investigated with confirmatory factor analyses (CFA) on remaining dataset according to three methods. In order to investigate the model-fit change between data before and after exclusion of CRs, CFA fit indices were used. CFA analyses were conducted on RStudio with 'lavaan' package with WLSMV estimator. Since all scale items have four response categories and the multivariate normality wasn't met, WLSMV was preferred. Fit indices are reported in Table 5 below.

Firstly, when fit indices of baseline model were investigated it was seen that the model-data fit is in an acceptable level for both Turkey and Singapore (CFI>.90, TLI>.90, RMSEA<.08, SRMR<.08). Singapore had better model data-fit since its' CFI and TLI values were higher and SRMR was lower compared to Turkey. As can be seen, removing participants according to response time and long-string methods increased CFI and TLI scores and decreased RMSE, SRMR values which means that it offered a significant improvement in model-data fit (ΔCFI <. -01) for both countries. According to CFI, TLI, RMSE and SRMR values, long-string method was the one providing the most significant improvement between raw dataset and the remained dataset. Removing respondents who were flagged according to response time index also significantly improved the model fit. However, outlier method didn't provide any improvement on fit indices in comparison with raw data.

Table 5. Fit indices of original (baseline) and remained datasets

	Method	CFI	TLI	RMSEA	SRMR
SNG					
	Baseline	0.935	0.917	0.060	0.040
	Response Time	0.937	0.919	0.060	0.039
	Outlier	0.928	0.907	0.065	0.039
	LongString	0.939	0.921	0.060	0.038
TUR					
	Baseline	0.909	0.883	0.060	0.048
	Response Time	0.913	0.889	0.059	0.046
	Outlier	0.907	0.881	0.065	0.046
	LongString	0.925	0.903	0.056	0.042

DISCUSSION

Although importance of possible problems caused by careless responding (CR) in survey data have been emphasized in several studies, data screening for CR is not common practice. This lack of screening might be due to the fact that although there are several studies on careless responding and its identification methods in the literature, there has been still no clear answer concerning the effectivity of CR identification methods. As a contribution to that problem, the effect of careless respondents flagged by three of popular methods namely response time, outlier and long-string indices to identify CR were examined and the performance of three identification methods were compared on a real dataset. Some psychometric properties of the scale and model-fit was compared after removing flagged CRs.

Consistent with previous researches (Goldammer et al., 2020; Huang et al., 2012; Meade & Craig, 2012; Ulitzsch et al., 2022; Wise & Kong, 2005), as a result of this research, response time was determined as an effective method to identify CR. It provided significant improvement in model fit. However, in contrast to previous findings (Goldammer et al., 2020; Huang et al., 2012), long-string index was stated as the one providing highest model-data fit improvement so it was taken as the most effective strategy to identify CR as a result of this research. As Johnson (2005) stated, long-string analyses is based on the assumption that if a person consistently gives the same response, his/her reactions may not be responsive to the item content. It assumes that there should be a variability in responses of a person. This technique tends to be affected by scale or sample properties. That is why it is hard to compare findings from long-string analyses across different data collections (Curran, 2015; Johnson, 2005). Curran (2015) stated that long-string analysis provide opportunity to eliminate some of the worst of the worst responders, but it might be challenging to accomplish much more. Response time and long-string methods are suggested as a bare minimum for the removal of careless responders and a good start before implementing more advanced techniques (Curran, 2015). Despite of the limitations that long-string method has, it is better to exclude worst responders than doing nothing at all. In addition to that, because of its' scale and sample-specific nature, there is no global cut-off score to identify careless ones and it can be decided in different ways in different studies which can result in different findings.

Another result of this study was that using outlier analyses didn't provide any improvement and that finding was not in line with previous studies findings (Goldammer et al., 2020; Meade & Craig, 2012; Ulitzsch et al., 2022). Meade & Craig (2012) stated that this technique may be affected by both deviations from normality in items and too much normality in careless responders. Besides, careless responders could be well versed at giving their responses that are close to the midpoint of other responses and could not be flagged by this method. It was expected that different CR detection methods flag different responders and it is quite understandable. For instance, the long-string index won't be able to identify someone who answers questions at random, but another technique might.

When descriptive statistics were investigated in detail, it was realized that total scale score increased with exclusion of careless responders for Turkey but not for Singapore. But, examining scales separately in detail, it was indicated that S1, S2 and S4 scores increased and S3 scores decreased with exclusion of CR at all methods. It means that careful responders had higher level of enjoyment of reading, perception of competence and perception of difficulty of PISA tests scores and lower score of perception of difficulty of reading than excluded responders who were flagged as careless. It has frequently been reported that unmotivated participants frequently provide careless responses (Rios & Soland, 2021; Schroeders et al., 2022; Ulitzsch et al., 2022; Wise & Kong, 2005). Mol and Bus (2011) stated that since motivation influences how much and how widely kids read, which in turn helps students develop their reading competency, motivation is thought to be especially important. Students with high interest are more likely to be engaged in reading tasks (Grabe, 2009). So, it was expected that level of enjoyment of reading and perception of competence of careful responders were higher and perception of difficulty of reading were lower than careless ones. About the perception of difficulty of PISA tests, it can be considered that since careful responders were assumed to give more effort for the test and they were more likely to be engaged, they may have perceived the test more difficult. In addition, Cronbach alpha for separate scales and stratified alpha for general scale was computed to observe possible changes in alpha after exclusion of flagged CR. The results indicated that removing CR did not led to big differences on reliability coefficient. The biggest difference was on that exclusion of respondents with respect to long-string index reflected on the dataset negatively in terms of reliability for Turkey dataset. Wise & DeMars (2006) worked on a cognitive test and observed that after removing low-effort students, coefficient alpha

of the test dropped to 0.66 from 0.84. Similarly, Guo et. al. (2016) reported that exclusion of rapid guessers led to a decrease in reliability coefficient. So, the result was not unexpected.

When findings of the study were examined in country level in detail, it was discovered rate of careless responders were higher in Singapore sample for response time and long-string index and lower for outlier method. Since outlier method was the one providing no improvement at model-data fit after removal of careless responders according to CFA results, response time and long-string index were taken into consideration for interpretation. As Grau et al. (2019) stated, some differences in CR among countries could be expected. They mentioned that the amount of CR is expected to be lower in individualistic countries than in collectivistic ones since people who live in individualistic countries may be more accustomed to being concerned with personal attitudes, feelings or evaluations. They may also be more likely to respond truthfully to questions about their personality and attitudes when asked in a questionnaire. When the Individualism Distance Index (IDV) of Turkey and Singapore were examined, it was seen that Turkey had higher IDV than Singapore which means that it is more individualistic. So, it was expected that the amount of CR was lower in Turkey than in Singapore.

IMPLICATIONS AND RECOMMENDATIONS

As results illustrated, careless responding may have important effects on psychometric properties of self-report and screening the data for careless responding, which is actually an extension of more conventional data cleaning, is strongly suggested in future studies. The findings of this study may offer practitioners recommendations on how to deal with careless responding especially on self-report scales. Considering how widely self-report scales are used in the field of educational research, the findings are important to increase educational researchers' awareness on careless responding and how to deal with it. Besides, present study adds to the literature by focusing on cross-cultural comparison on a real data set but there are still unanswered questions.

The results of this study are limited with the particular sample and measures used. Especially long-string method is a sample and scale-specific method and may give different results in different conditions. As another method, response time could not be examined in item level since data were provided only at scale level. That is why, page time index was computed and evaluated. As another limitation, the number of items on scales was not too much, it was a 14-item scale.

Future research may consider to use different CR identification methods on different samples and longer scales. Since data used in this research is ready to use and researcher has no control on it, post-hoc methods were used and the accuracy or sensitivity of the methods could not be examined in detail. Future research may consider to collect data and take priori methods into consideration. Besides, some personal characteristics such as gender, age, motivation could also be examined on how they affected CR.

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Statements of publication ethics

I/We hereby declare that the study has not unethical issues and that research and publication ethics have been observed carefully.

Researchers' contribution rate

The study was conducted and reported by the researcher herself on each stage.

Ethics Committee Approval Information

In the context of this study, PISA 2018 dataset which can be directly downloaded from OECD website by everyone was used. It was a ready-to-use dataset and there was no data collection process carried out by the researcher. So, ethics committee approval was not required.

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Pre-service Teachers' Knowledge of Statistical Questions in the Context of Lesson Study

Öğretmen Adaylarının Ders Araştırması Bağlamında İstatistiksel Sorulara İlişkin Bilgileri [1]

Nadide Yılmaz[2], **İ. Elif Yetkin-Özdemir**[3]

Abstract

Purpose: This study aims to investigate the evolvement of pre-service teachers' (PTs') content and pedagogical content knowledge related to formulating statistical questions and its role in doing statistics through their participation in a lesson study.

Design/Methodology/Approach: A case study was employed, involving three PTs who participated in three lesson study sessions. Each group member implemented a lesson plan, initially in the university classroom and subsequently in a real classroom. The authors, the mentor teacher, and the group members observed the implementations and shared their insights. Data were collected through lesson plans, observations, and video recordings. The changes in PTs' knowledge were analyzed within the identified knowledge domains.

Findings: Initially the PTs did not have doing statistics starts with statistical questions, and these questions affect all phases of doing statistics. In task design, they omitted a problem statement guiding students to formulate a question and provided limited opportunities for students to contemplate problems leading to a statistical investigation. As the lesson study progressed, they began recognizing the significance of formulating a question. They became more attentive to students' prior knowledge and misconceptions.

Highlights: In the development of the PTs' knowledge and skills about formulating questions, some activities they conducted throughout the lesson study cycles are thought to be effective. Although they gained awareness about formulating questions in doing statistics, challenges persisted even in the last lesson study cycle. From this perspective, extended studies are necessary to elucidate the evolution of teacher knowledge.

Öz

Çalışmanın amacı: Bu çalışma, öğretmen adaylarının ders araştırmasına katılmaları boyunca istatistiksel soru formüle etme ve bunun istatistik yapmadaki rolü ile ilgili alan ve pedagojik alan bilgilerinin değişimini araştırmayı amaçlamaktadır.

Materyal ve Yöntem: Bu amaçla durum çalışması benimsenmiş, üç öğretmen adayı üç ders araştırması uygulaması gerçekleştirmiştir. Her grup üyesi, önce üniversite sınıfında ve ardından gerçek sınıfta hazırlanan ders planını uygulamıştır. Araştırmacılar, uygulama öğretmeni ve grup üyeleri uygulamaları gözlemlemişler, önerilerini dile getirmişlerdir. Veriler ders planları, gözlemler ve video kayıtları aracılığıyla toplanmıştır. Elde edilen veriler öğretmen adaylarının alan ve pedagojik alan bilgi bileşenlerindeki değişim bağlamında analiz edilmiştir.

Bulgular: Sürecin başında, öğretmen adaylarının istatistik yapma sürecinin soruları formüle etme ile başladığına ve bu aşamanın tüm süreci etkilediğine dair bilgiye sahip olmadıkları gözlenmiştir. Hazırladıkları görevler incelendiğinde, bu görevlerin öğrencileri -istatistiksel- soru formüle etmeye yönlendiren bir problem ifadesi içermediği ortaya çıkmıştır. Ayrıca öğrencilere istatistiksel araştırmaya götüren problem hakkında düşünmeleri için fazla fırsat vermemişlerdir. Ders araştırması uygulaması ilerledikçe öğretmen adayları neden bir soru formüle etmeleri gerektiğini anlamaya başlamışlar, öğrencilerin ön bilgilerine ve kavram yanılgılarına daha fazla dikkat etmişlerdir.

Önemli Vurgular: Öğretmen adaylarının soru oluşturma konusundaki bilgi ve becerilerinin gelişmesinde ders araştırma uygulamaları boyunca yaptıkları bazı aktivitelerin etkili olduğu düşünülmektedir.Öğretmen adayları istatistik yaparken soru formüle etme konusunda farkındalık kazanmalarına rağmen son ders çalışma döngüsünde bile çeşitli zorluklar yaşadıkları belirlenmiştir. Bu açıdan bakıldığında öğretmen bilgisinin gelişimini açıklamak için uzun soluklu çalışmalara ihtiyaç olduğu söylenebilir.

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INTRODUCTION

Statistics is a way to derive meaning from the real world by means of data (Wild, et al., 2018). Statistical research aims to solve problems that can be responded to by collecting and analyzing data (Graham, 2006). Doing statistics begins with formulating questions to solve a statistical problem and collecting data to find the answer to the question (Franklin et al., 2007; Scheaffer, 2006). Various tools, such as graphs and measures of central tendency and variation, are employed to organize and analyze the data (Franklin et al., 2007). In the last phase of doing statistics the results are interpreted based on the questions formulated at the beginning (Franklin et al., 2007). That is, the problem and the subsequent process of doing statistics directly in relation to each other (Bargagliotti, et al., 2020; Heaton & Mickelson, 2002). The questions formulated at the beginning shape the whole process of doing statistics (Arnold, 2013; Bargagliotti, et al., 2020; Franklin et al., 2007).

Emphasizing the significance of statistical research, it is crucial to recognize the vital role of the statistical problem in this process. Both teachers and students are encouraged to be 'critical consumers of data' in the teaching process, with teachers adopting the role of statisticians (Russell, 2006). In this process, teachers' both subject matter and pedagogical content knowledge about formulating questions play a critical role (Graham, 2006). However, challenges arise as teachers often find it difficult to support students' doing statistics during the teaching process (Arnold, 2013; Burgess, 2007; Heaton and Mickelson, 2002; Pfannkuch & Horring, 2005). Lesson study, which allows opportunities for teachers/PTs to develop their teaching, can be one of the important supporters (Lewis, 2002). By participating in lesson study, teachers can develop new knowledge, insights, and beliefs about student learning, ultimately improving their overall knowledge (Desimone, 2009; Ricks, 2011). This study examines how teachers' content and pedagogical content knowledge about formulating questions evolve during their involvement in lesson study.

THEORETICAL FRAMEWORK

In this section, formulating statistical questions in doing statistics in school mathematics, teacher knowledge, and lesson study are explained.

Formulating Statistical Questions in Doing Statistics in School Mathematics

Doing statistics is also emphasized in the school curriculum, and formulating the questions and understanding its role in this process are considered as important competencies that students should gain (Bargagliotti, et al., 2020; Franklin et al., 2007). In the Turkish context, doing statistics is included in the mathematics curriculum (Ministry of National Education [MoNE], 2018). It is essential for students to engage in doing statistics by formulating questions, collecting, analyzing, and interpreting data in a holistic manner (Burgess, 2011; MacGillivray & Pereira-Mendoza, 2011). However, doing statistics, and particularly formulating statistical questions in school, usually does not look like conducting statistical research in real life. The problems encountered in real life are usually ill-structured and ambiguous and make us feel needed to solve; there is a specific purpose for conducting a statistical inquiry (Graham, 2006; Pfannkuch & Horring, 2005). In contrast, questions formulated in the school curriculum are typically structured (Makar & Fielding-Wells, 2011). Researchers suggest that the statistical problems should be challenging and stimulate students' critical and creative thinking. Also, the statistical questions should allow students to collect data or think about how data could be collected. Importantly, the questions should lead to the collection of meaningful and logical data and be connected to daily life situations with clearly indicated group characteristics for data collection (Arnold, 2013; Graham, 2006; Franklin et al., 2007; Konold & Higgins, 2003; Pfannkuch & Horring, 2005; Russell, 2006).

Despite the emphasis on formulating questions, students often encounter difficulties in this process. Common challenges include an inability to determine if a given question is statistical, relying solely on personal beliefs during formulation, and overlooking the function of the question in doing statistics (Arnold, 2013; Heaton & Mickelson, 2002; Pfannkuch & Horring, 2005; Pfannkuch & Wild, 2004; Rubick, 2000). The content and pedagogical content knowledge possessed by teachers can play a crucial role in helping students overcome these challenges (Franklin et al., 2015).

Teacher Knowledge and Lesson Study

Effective teaching involves a comprehensive understanding of the mathematical subject being taught. Numerous studies emphasize that mathematics teachers should possess mastery across various knowledge domains (e.g., Hill et al., 2008). The foundation for defining the knowledge of teaching mathematics was laid by Shulman (1986), as articulated by Ball et al. (2008). This framework is essential for portraying middle school mathematics teachers' knowledge (Leavy, 2015). Within this framework, the knowledge of teaching mathematics is categorized into subject matter knowledge and pedagogical content knowledge. Subject matter knowledge is further divided into common, horizon, and specialized content knowledge. Pedagogical content knowledge is subdivided into content and students knowledge, content and teaching knowledge, and content and curriculum knowledge.

While common content knowledge includes knowledge that is not specific to the teaching environment, specialized content knowledge is determined as the knowledge that plays an active role in the teaching process and that a mathematics teacher should use in his/her professional life. Horizon content knowledge entails the awareness of the teacher about how the mathematics subject he/she focuses on is related to other subjects in the curriculum (Ball et al., 2008). One of the components of pedagogical

content knowledge, knowledge of content and teaching is defined as the knowledge required to determine the appropriate teaching strategies and techniques, as well as the materials and demonstrations that the teacher will use in the teaching process, while knowledge of content and students is expressed as the knowledge of students' thinking styles, the difficulties they experience and the knowledge of being aware of mistakes and misconceptions. Knowledge of content and curriculum includes knowledge about the topics covered by the teacher, how the learning outcomes are addressed across the curriculum, and the order in which they are taught (Ball et al., 2008; Hill et al., 2008). It is thought that defining these types of knowledge as critical knowledge based on classroom teaching practices is also valid when teaching statistics, and that it is important to reveal this knowledge (Konold & Higgins, 2003).

The effectiveness of the teaching process related to statistics also depends on teachers' competence in content and pedagogical content knowledge regarding the doing statistics and the components in this process (Burgess; 2007; Franklin, et al., 2015). The first of these components is the formulation of questions (Bargagliotti, et al., 2020; Franklin et al., 2007; 2015). Research indicates that both teachers and PTs encounter difficulties in formulating questions. Although teachers acknowledge the significance of formulated questions, they struggle to teach this aspect of doing statistics (Burgess, 2007). Pfannkuch and Horring (2005) stated that teachers' ability to formulate questions was limited, while Heaton and Mickelson (2002) stated that PTs needed support in formulating questions. There is a need for studies exploring the importance and components of formulating questions and how they should be integrated into the teaching process for both teachers and PTs (Arnold, 2013). Shaughnessy (2007) emphasizes that existing studies on doing statistics primarily focus on data collection, analysis, and interpreting findings. There is a gap in understanding teachers' and PTs' perspectives on statistical questions and their role in teaching statistics.

To address these challenges, various supports, such as those proposed by Ball and Cohen (1999) and Ball et al. (2005), can aid PTs in overcoming difficulties. Lesson study is an impressive professional development program in terms of recognizing and eliminating the deficiencies of teachers (Chassels & Melville, 2009; Saito et al., 2006). It includes constructivist learning and creates learning opportunities (Dudley, 2014). While rooted in in-service teacher training, lesson study is successfully applied in PT training (Fernandez & Zilliox, 2011; Leavy, 2015; Sims & Walsh, 2009). It involves collaborative planning, implementing, and analyzing lessons to enhance teaching effectiveness. PTs' participation allows for eliciting their content and pedagogical content knowledge, facilitating connections between these knowledge types (Leavy, 2015). Considering the impact of teachers' knowledge and skills on student achievement (Desimone, 2009), supporting the development of this knowledge becomes essential. Given that the practices, knowledge, and beliefs of PTs are significantly shaped during pre-service education programs (Kyles & Olafson, 2008), examining PTs' knowledge is crucial. Analyzing their own teaching, a practice with a long but less noticed history (Hiebert et al., 2007), is argued to provide learning gains for PTs (Van Es & Sherin, 2002). It can be thought that the practices carried out during the lesson study will be an important supporter at the point of imparting these skills to PTs (Ball & Cohen, 1999).

The process of doing statistics and revealing the deficiencies in teachers' knowledge about formulating questions in this process (Arnold, 2013; Heaton & Mickelson, 2002; Pfannkuch & Horring, 2005) requires teachers to acquire content and pedagogical content knowledge about the properties of formulating questions and to understand how it will reflect in the classroom environment (Arnold & Pfannkuch, 2018). Lesson study can play a crucial role in supporting the development of teachers' knowledge in this regard (Knapp et al., 2011).

METHOD/MATERIALS

The qualitative research method was employed, and a case study was adopted to thoroughly investigate changes in the knowledge and experiences of prospective teachers (PTs) during their participation in lesson study cycles. The aim was to understand these changes in greater detail within the natural course of their involvement, discern their implications, and learn about their perspectives.

Context of the Study and Participants

The context of the current study is a four-year elementary mathematics teaching program at a state university in Ankara. When they have graduated from this program, teachers can teach mathematics to 5th-8th graders. The language of instruction in the program is Turkish. PTs mostly receive subject matter courses for the first two years (e.g., Fundamentals of Mathematics), and then in the last two years, they mostly receive pedagogical content knowledge courses (e.g., Methods of Teaching Mathematics, Teaching Practicum). In this context, the elective course was opened. The selection of participants was based on criteria such as voluntary participation and successful completion of courses related to statistics teaching (e.g., Statistics and Probability). Twelve PTs meeting these criteria opted for the elective course. The study included data from Beyza, Şirin, and Gamze, who played more active roles in the observations and discussions throughout the process and expressed themselves effectively. The GPAs of the PTs were as follows: Beyza 3.21, Şirin 3.26, and Gamze 3.29 out of 4, respectively.

Procedure

This study lasted for 14 weeks. During the initial three weeks, participants were introduced to the course, reading and discussing articles on the field of data analysis (Ben-Zvi, 2011; Cobb & McClain, 2004). In the ongoing week, information was given about the lesson study model and how the process would proceed was discussed. In the next three weeks, pre-pilot study was conducted. The first aim of this pilot study was to get to know the PTs more closely and to make them gain experience in the

lesson study process. The second aim was to ensure that both students in the real classroom environment and the PTs get used to each other. In the next seven weeks, PTs implemented lesson study. The process is illustrated in Figure 1.
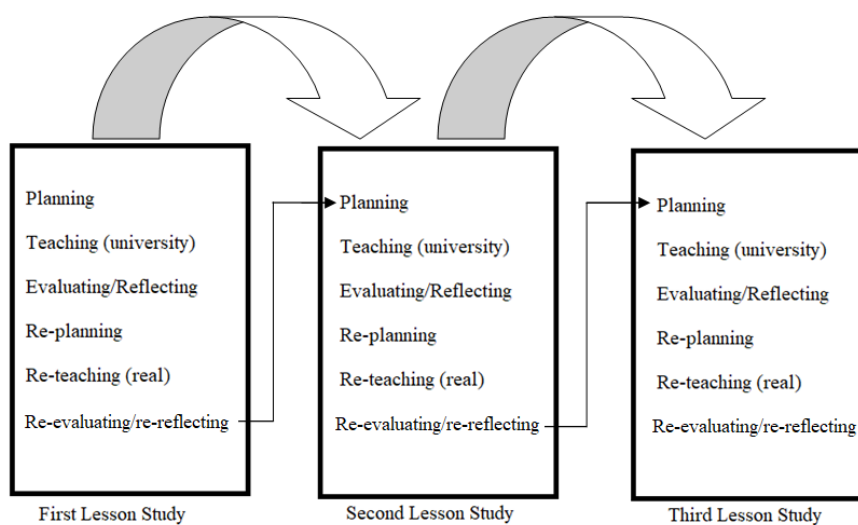
Figure 1. Lesson study cycles (Adapted from Zhang & Cheng, 2011)

The PTs focused on three objectives related to the data handling learning area (MoNE, 2018) and conducted the lesson study cycles. The PTs were asked to prepare their lesson plans according to the lesson planning format (learning activities, expected student responses, teacher's responses, goals, and methods of evaluation) (Mathews et al., 2009). Following the completion of the lesson plans, one PT from each group implemented the lesson initially in the university classroom and then in the real classroom. Each group member was responsible for implementing one of the three designed lesson plans. During the implementations, the course instructor (second author) and the researcher (first author), serving as an expert in the university, observed and provided feedback. Additionally, PTs and group members shared their comments and recommendations on how to enhance each lesson plan. In the real classroom, the mentor teacher and the researcher (first author) attended each implementation as observers, offering comments and suggestions.

Data Collection and Analysis

Data were collected from various sources to comprehensively analyze the discussed situation (Creswell et al., 2007). The following data collection tools were employed in this regard: lesson study meetings, video recordings of both university and real classroom implementations, lesson plans prepared by PTs, observation notes, field notes taken by the researcher, and reflective papers written by the PTs. Table 1 illustrates the relationships between the lesson study cycles and the employed data collection tools.

Table 1. Data collection tools used across the lesson study cycles

Data Collection Tools	Planning	Teaching (university)	Evaluating/Reflecting	Re-planning	Re-teaching (real)	Re-evaluating/ Re-reflecting
Lesson plans	x			x		
Video recordings of the lesson planning meetings	x			x		
Researcher's field notes	x	x	x	x	x	x
Video recordings of the lessons delivered		x			x	
Expert's observation notes		x			x	
Observation notes of the other PTs in the group		x			x	
PTs' reflective papers			x			x
Video recordings of the evaluation meetings			x			x

In the process of analyzing data, statistical questions proposed by the PTs were coded based on various characteristics of statistical questions as identified in the literature (Arnold, 2013; Arnold & Franklin, 2021; Franklin et al., 2007; Graham, 2006;

Konold & Higgins, 2003; Makar & Fielding-Wells, 2011; Pfannkuch & Horring, 2005; Russell, 2006). It was not analyzed in terms of the components of the subject matter knowledge (e.g., specialized content knowledge), but rather analyzed holistically because the existing research indicates that there is no need to evaluate the components of the subject matter knowledge separately from each other and that it is important to see the holistic picture (Putnam & Borko, 2000). The emergence of each type of knowledge in the lesson study processes was observed and evaluated using direct quotations where necessary.

Table 2. Teacher knowledge domains, sub-domains and definitions in the analysis process (Developed by Ball et al., 2008)

Knowledge domains	Knowledge subdomains	Definitions
Content knowledge		Knowing that the doing statistics starts with formulating a question Knowing what the properties of formulating questions are, It involves a problem situation or a purpose that encourages students to initiate a statistical investigation, It is related to contexts involving real-life situations; It allows data collection or thinking about the data collection process; The group characteristics for which data will be collected are clearly indicated.
Pedagogical content knowledge	Content and teaching	Making explanations around formulating questions Constructing the tasks they have prepared around formulating questions Making explanations to make students realize that the problem-solving process starts with formulating questions and motivating them to such explanations
	Content and student	Taking students' prior knowledge into account (e.g., a bar chart is a prerequisite for a pie chart) Taking the points where students can have difficulties into consideration (e.g., overlooking formulating questions,) Taking potential thoughts of students into consideration (e.g., the same data are represented with both a bar chart and a pie chart.)

The analysis was conducted for each lesson study cycle. The researcher coded the raw data in different time periods (three months). The consistency obtained from these encodings was 90%. Also, an expert in mathematics education was asked to review the data. Twenty-five percent of the data was provided to the expert, and the emerging codes were compared with those obtained by the researcher. The intercoder reliability of the study was determined to be 85%.

FINDINGS

How the PTs' content, teaching and student knowledge regarding the formulating questions changed during their participation in the lesson study cycles was discussed in each lesson study.

First Lesson Study

The PTs were observed to neglect the inclusion of statistical questions in both their task design and lesson implementation for the first objective (pie graph-7th grade). It was noticed that the questions they formulated focused solely on data and real-life situations, lacking a statistical aspect. However, the PTs began recognizing the importance of formulating questions in doing statistics when reading about it in the course textbook section: *"As you evaluate students in the area of graphing, it is important not to focus undue attention on the skills of constructing a graph. It is more important to think about the choice of graphs that the students make to help answer their questions or complete their projects. Your goal is for students to understand that a graph helps answer a question and provides a picture of the data."* (Van de Walle et al., 2010, p. 445) (1. University Planning). They, however, did not take into account this phase of doing statistics in their planning of the lesson related to the first objective they worked on. Moreover, they did not connect it with the data collection process, although group characteristics were included. Their task required students to convert a bar graph into a pie graph without presenting a problem or reason that leads to formulating a question. In the written lesson plan they noted *"Let's convert bar graphs into circle graphs"*. Gamze, who was carrying out the lesson expressed their expectation *"…Now we have bars of different lengths, right? Now, if we thought of them as sticks, how could you turn them into a pie or a circle? How can you convert?"* (1. University Planning). Despite attempts to consider students' prior knowledge, such as a bar graph being a prerequisite for a pie graph, they failed to address typical thoughts and points of difficulty. At the end of the implementation the instructor of the course asked *"…Why do we construct a pie graph? We need to think about it…"* and reminded them that they should have a purpose in doing statistics. In their reflection, Şirin stated that *"…The purpose of statistics was to answer a research question [formulating questions], I couldn't understand it before."* while Beyza stated that *"I have learned what to use when creating a research question [formulating questions] and in which situations we should ask which questions"*. Therefore, it can be said that PTs realized the importance of formulating questions in doing statistics with the first implementation. Thus, it can be concluded that their content knowledge started to improve. However, they have had difficulty in reflecting this understanding on their revised lesson plan and the teaching in the real classroom. Gamze introduced the task without any problem situation that led to formulating a question for students: *"Well, I want to ask you something. Now, isn't this*

data from the bar graph? I want to convert it to the shape that you call as a pie but actually a circle graph." Even though formulating questions did not take part of their instruction, these experiences helped them to ask questions about the purposes of doing statistics and increased their awareness as shown in Şirin's reflection: *"As a group, we were focusing only on constructing graph while preparing lesson plans. In fact, the main thing in graphing is the research question [formulating questions]. We were always skipping this part. Thanks to this lecture, we realized this situation."*

Second Lesson Study

Concerning the second objective (line graph-7th grade), a similar trend was observed in the planning and implementation of the lesson in the university classroom. During this session, Şirin, who conducted the lesson, presented the task to students by stating, *"...Let's say I presented the average weather temperature of a city for 5 days. I want you to display this [data set] into a graph. What kind of a graph do I use?"* (2. University Teaching). However, it was noted that the PTs still did not incorporate any problem situation or purpose that led to formulating a question. At the end of the teaching, the instructor once again pointed out that there needs to be a purpose in lesson plans *"For what purpose do we use statistics? What's the point? Why are we comparing [the temperatures] here?"* (2. University Evaluating). Through these experiences, the PTs became more attentive to formulating questions as they revised the tasks. At this juncture, it can be argued that there have been some improvements in their pedagogical content knowledge. During the re-planning meetings, they specifically focused on creating the problem statement.

Second lesson study re-planning

".........

Şirin: Then I introduce the problem situation… Uncle Hasan will plant a vegetable. Let us present one condition for planting this specific vegetable: There should be the lowest change in the temperature for two consecutive days after the seeds are planted. At least this many days there should be little change in temperature. There must be almost none.

Beyza: Should we specify that the temperature should remain constant, or do we express it as minimal change?

Şirin: We'll say that there will be a change; the temperature cannot stay constant for 3 days.

Beyza: Well, there is little change. It is very important that the temperature does not change much.

Şirin: For example, we will present [temperature values] for two weeks. It will increase and decrease. But we will ask them to find the days with little change [of temperature]. ....

Şirin: I asked how we could have collected the data. Now we have presented a problem situation. This is our problem situation; the aim is to solve it. The aim is to solve this problem. Let's go with proper graphic construction. Then let's guide it a little…"

It was observed that PTs talked about presenting a problem situation and a purpose. In addition to including real-life situations, they clearly stated group characteristics. Moreover, the prepared formulation question requires data collection.

"Uncle Hasan will plant a vegetable in his garden. In order to get the highest yield from this vegetable, the temperature change should be the least for 2 days after the day it is planted. We've got the temperature values for the next 14 days.

1	2	3	4	5	6	7	8	9	10	11	12	13	14
20°C	23°C	25°C	22°C	19°C	23°C	26°C	24°C	25°C	26°C	25°C	23°C	20°C	24°C

Let's find the best days of planting for Uncle Hasan."

Figure 2. Revised task

It was observed that the revised task involves a problem situation (i.e., we can't plant the seeds on a random day if we want the highest yield) and a purpose (i.e., finding the best day to plant) that leads to formulating a question (which consecutive days the temperature change will be the lowest) that requires dealing with data. During the implementation Şirin introduced the task and asked students if they could use a bar graph. An excerpt from the class discussion is as follows.

Second Real Classroom Teaching

"...

Şirin: So, what graphics did we learn?

Student: Bar graph, circle graph, pie chart, sector, tally table.

Şirin: Yes, now we have learned these graphs. So, what was the bar graph? Let's construct a bar graph. Let's see if this is a graph suitable for the data or what I'm researching...

The PT's following statement uttered during the implementation *"Let's see if this is a graph suitable for the data or what I'm researching,"* shows that he/she not only tried to make students think but also to establish a relationship between the data analysis process and the initial research purpose/problem. Additionally, Şirin's question aimed to assess prior knowledge and encourage students to think about the problem, leading them to formulate questions.

Second Real Classroom Teaching

"..........

Şirin: What was our question then? What was our initial problem?

Student: Uncle Hasan is going to plant a vegetable. But the temperatures should be close to each other for crops.

Şirin: Exactly, we will choose days without much change. We'll choose three days and there won't be much temperature change. Then let those who finish the graph find these days.

Student: We found it.

....

Student: 9., 10., and 11. (days), my teacher.

Şirin: Now what was our question? In order to plant the vegetable at the right time, the temperature change must be the lowest. Yes, 9th, 10th, and 11th days; then we solved this question…"

In the dialogue above, it is seen that the PT used the question and problem together by asking *"What was our question then? What was our initial problem?"* Here, it can be said that though their awareness of the fact that the research question includes a problem increased, they still tend to use them interchangeably. However, Şirin effectively guided students to consider the problem and stated in her journal, *"We understood the importance of graph interpretation in a lesson plan for teaching line graph according to a research question [formulating questions] based on the problem situation."* Even though the PTs have realized the importance of formulating questions in doing statistics, they were still struggling with designing tasks that involve a problem situation and a question to be addressed by engaging with data meaningfully.

Third Lesson Study

When planning a lesson for the third objective (pie, line and bar graph-7th grade), PTs avoided using statements directing students to construct a specific type of graph. Instead, they designed tasks with certain properties in mind: tasks that involved real-life situations, clearly presented group characteristics, and directed students toward data collection. They aimed to structure the tasks so that students decide which type of graph to use by themselves. They, however, overlooked presenting a problem situation that could lead students to formulate questions and proceed accordingly. Rather, they focused on presenting keywords (e.g., compare, change, ratios, or percentages) that could be associated with certain types of graphs or used general statements (e.g., use appropriate graphs) without presenting a rationale to use the specific type of graph. The following dialogue illustrates their attempt to formulate a question when designing a task related to pie graphs.

Third University Planning

"…..

Beyza: Let's give them data like yours [referring to Gamze's suggestion] and ask them to represent the data with the appropriate graph type.

Gamze: Then we can ask, "Which graph do we need to use to show the proportion of the part of the wage paid for the rent to the whole wage?

Şirin: For example, …when there is temperature data, they think a line graph is more appropriate. For the circle graph, as Gamze said, in the question part, we [should?] state that they can proportion to the whole. What can we say for the bar graph? We directly say, construct a graph. Or comparison of age groups with each other.

....

Gamze: In fact, all the graph types can be used. Thus, the question that needs to be asked is "Which graph is more suitable? For example, they are planning to construct a graph in order to see the ratio of the rent to the whole salary more easily. Which graph would be more convenient to use?"

While PTs occasionally provide examples illustrating the purpose of formulating questions during discussions (e.g., determining the ratio of rent to the entire salary), they struggle to incorporate a problem situation and purpose when formulating questions for implementation. It is evident that PTs tend to focus on keywords. The main reason for using the keywords was to reveal the purpose of selecting the particular type of graph. However, in a learning environment that encourages doing statistics, students are expected to form the purpose from the problem situation themselves. Without the problem statement, attempting to create a match between the keyword and the graph type may prevent deriving meaning from situations requiring the use of data. Although the PTs occasionally considered whether the task included a problem situation, they usually did not consider it as an issue. As exemplified in the task below (Figure 3), the question formulated by the PTs lacks a problem situation. Although the task includes statements such as "construct the appropriate graph," "interpret the relative position of three courses within the whole data," and "find the percentages," there was no problem situation expressing why the relative position of three courses within the whole data set should be considered.

"Favorite courses in class 7/A

Courses	Number of students
Mathematics	4
Turkish	3
English	2
Physics Education	5
Art	1
Science	3
Social Studies	2

The table shows the number of the students in class 7/A and their favorite courses. Construct the appropriate graph according to this data and interpret the ratio of the 3 courses you selected according to the whole class and find the percentages."

Figure 3. University Lesson Plan-Circle Graph

Similar situations were noted in the preparation of tasks involving bar and line graphs. These instances reveal that participants (PTs) tended to place keywords at the center when formulating questions. The fact that PTs formulated questions by focusing on keywords caused them to make their explanations and feedback accordingly during classroom implementation. The following excerpt illustrates a segment of the decision-making process related to the circle graph in a university classroom.

Third University Teaching

"…

Beyza: Okay, how do we do this?

Student: Well, when it says percentage, I directly think of a circle graph.

Beyza: Is it just because of the percentage?

Student: Yes, percentage. I also thought that the circle graph would be appropriate for us to look at the data and find the rates compared to the whole.

In the dialogue mentioned earlier, both the PT and the student primarily concentrated on the keywords. After the teaching, PTs evaluated themselves and decided to make some revisions to the task. In the revised task, they included a purpose as a rationale for constructing a particular graph:

The table shows the number of the students in class 7/A and their favorite courses. The teacher wants to know whether mathematics is popular among all courses. Construct the appropriate graph and interpret the relative position of mathematics among two other courses that students state as favorite.

Figure 4. Revised Task-Circle Graph

In fact, the reflection journals of the PTs also revealed their recognition of the importance of introducing a problem situation or purpose. For instance, Beyza highlighted, *"I have learned that I must present students with a problem situation so that they have a purpose and can act accordingly."* Similarly, Şirin articulated, *"The students' need to use a graph is crucial. Consequently, we must design the problem situation in a way that necessitates the use of a bar graph; we came to this realization."*

The PTs also started to consider students' thinking as they design the tasks and formulate the questions. For instance, they decided to create a task related to voting that prompts a comparison among categories, necessitating the use of a bar graph. Recognizing that data related to voting are typically represented by pie graphs, PTs chose to construct students' attention to the formulated questions rather than solely focusing on keywords or familiar contexts. Furthermore, PTs initiated opportunities for students to generate their own questions. They emphasized that determining the most suitable type of data representation depends on the questions formulated. Their commitment to making students aware of the role formulated questions play in selecting the type of data representation is evident in Beyza's classroom teaching.

Third Real Classroom Teaching

"….

Beyza: …Now, let me pose a question. In this scenario, can we assert that either the bar chart or the pie chart must be employed? Consider this: for the first statistical question we discussed, we used the pie chart; for the second question, we used the line chart, and for the third question, we used the bar chart. Couldn't we have used the pie chart in the situation where we opted for the bar chart?

Student: Yes, we could

Beyza: Why didn't we construct it then?

Student: The question asked us to choose the president and vice president. Since we can see it as a percentage, we will calculate votes. According to whichever person has the most votes. To find whoever has the most votes.

Beyza: Yes, it says the most, we are comparing with each other. That is, there is no certain discrimination between the uses of different types of graphs. I use the one that is the most suitable for answering the statistical question. So, what matters here is what it wants from me. What I should see with my graph. So, whatever I should see on the graph, I choose my graph accordingly.

Here Beyza's efforts to attract students' attention to the questions formulated while deciding the most appropriate type of graph.

DISCUSSION, CONCLUSION AND SUGGESTIONS

This study aimed to explore the PTs' knowledge and skills related to formulating questions that can be addressed by collecting and analyzing data when doing statistics in a lesson study. Initially the PTs did not have the idea that doing statistics starts with formulating questions and that these questions affect all aspects of doing statistics. This lack of understanding has been reflected in their lesson plans and implementations. When designing tasks, they did not include a problem statement that could lead students to formulate a question to be addressed by constructing a graph. They simply asked students to construct a graph or convert one type of graph into another without presenting a rationale. This practice risks students perceiving graphs as mere tools for data organization, summarization, and simplification, rather than as tools for addressing statistical questions (Rouan, 2002), aligning with earlier research (Heaton & Mickelson, 2002; Pfannkuch & Horring, 2005). Even experienced teachers turned out to be structuring their lessons by centering statistical calculations (Quintas et al., 2014). Early experiences in school that did not consider all the stages of doing statistics may have been an important factor in PTs' incompetence (Arı, 2010).

Even as PTs gained knowledge and awareness of the need for problem statements, integrating this into classroom practice proved time-consuming. When designing tasks, they began to avoid merely asking to construct a particular type of graph or convert a graph into another. While the tasks they prepared had a purpose, they often did not include a problem situation that would direct students to formulate a statistical question. They either presented general statements (e.g., let's display given data with an appropriate graph) or they used keywords (e.g., compare, change) that could guide students to use a particular type of graph without stating a problem situation.

As the PTs endeavored to generate problem situations, they became more discerning in context selection. The problem situation and purpose that directs individuals to conduct statistical research gain meaning within the context. Therefore, the selection of context plays a pivotal role in effective statistics teaching (Franklin et al., 2007; Monteiro & Ainley, 2007). Guided by an expert teacher, they sought to capture students' attention by presenting a variety of contexts. Initially, PTs selecting a context for a problem situation involved discussing real-life scenarios typically associated with a specific graph type (e.g., depicting temperature changes with a line graph). However, the PTs began questioning the use of such prototypical situations and their associations with specific graph types, recognizing the potential for student overgeneralizations. Subsequently, they considered common conceptions, such as using pie graphs to represent votes, and designed a task with a context involving votes where a bar graph would be more appropriate. This case demonstrates their growing awareness of students' thinking and misconceptions.

The PTs also began recognizing how the questions formulated at the beginning influenced the stage of data collection and analysis. Initially, they considered only the type of variable (categorical or quantitative) when deciding which graph would be more appropriate to represent a data set. In the discussions made during the university implementation, PTs stated that they came across such generalizations in various textbooks, and therefore, they felt that these statements were true. Similar difficulties were identified in the literature (Burgess, 2002; Sorto, 2004). For example, in Sorto's (2004) study, the PTs expressed that a variable such as time should be represented by a line graph rather than a bar graph. It was revealed that they always thought that the time variable should be quantitative, so it would not be appropriate to represent the time variable with a bar graph. In the present study, as PTs faced queries from students regarding the possibility of representing data with alternative graph types, they began questioning common assumptions that categorical variables should be portrayed with a circle or bar graph, while quantitative variables should be depicted with a line graph or histogram. They realized that determining the variable type should be based on the formulated question, emphasizing the importance of considering the initial question when deciding which type of graph would be more appropriate to use.

We also noticed an improvement in the PTs' ability to engage students in the lesson. Initially, PTs didn't provide students with many opportunities to contemplate the problem; they typically presented the problem statement and formulated questions themselves. As they gained more experience, they began to think about the ways to include students in doing statistics. They provided more opportunities for students to think about the problem statements. However, there were missed opportunities for PTs to guide students in formulating questions from the presented problems. Additionally, they endeavored to formulate questions anticipating potential student misconceptions. They emphasized the role of graphs in responding to a statistical problem and made inquiries that would enable students to think in this direction. Alongside considering students' prior knowledge, they reflected on potential difficulties, mistakes, and misconceptions students might encounter.

In the enhancement of PTs' knowledge and skills in formulating questions, some activities conducted during lesson study practices are deemed effective. One of the main points highlighted in the research is to design classroom activities with a focus on doing statistics (Garfield & Everson, 2009; Heaton & Mickelson, 2002; Henriques & Ponte, 2014). At the beginning of this study, all stages of doing statistics were discussed with the PTs. However, it can be said that these discussions were not very effective until the PTs began teaching practices. They became aware of the doing statistics as they practiced, talked about, and experienced. Discussions with each other as a group and the discussions after teaching both in the university and in the real classroom can be considered as an important factor that triggers the change. The questions posed by the instructor (university classroom) and the mentor teacher (real classroom) played a pivotal role in helping PTs identify knowledge gaps and recognize the need for improvement. Such experiences potentially fostered knowledge sharing and diverse perspectives among PTs (Hiebert et al., 2003).

This study reaffirms the critical importance of PTs graduating with substantial field experience. In this regard, it can be suggested to open courses that will allow PTs to practice in real classroom. Existing research emphasizes that the planning, implementation, and evaluation activities of PTs in both university and real classrooms contribute to their knowledge development (Zhang & Cheng, 2011). The presence of a researcher who facilitates the change of PTs' knowledge throughout the process could be considered as another factor that may have trigged such development. The researcher actively participated in and supported PTs in all processes. In both planning and revising meetings, the researcher supported the change of knowledge by asking PTs questions to make detailed explanations of what they did and how they did and help them reflect on their own understandings and skills. Existing literature underscores the researcher's crucial role in recognizing and interpreting deficiencies in teachers' knowledge and overcoming these gaps (Ball & Cohen, 1999; Zawojewski et al., 2008). In light of the findings from this study, it can be argued that PTs conducting implementations focusing on formulating questions in statistics and understanding the features included in the questions contributed significantly to the development of their pedagogical content knowledge.

While the previously mentioned changes were evident in the knowledge of PTs, their capacity to develop tasks that support students' statistical thinking remains incomplete. These findings support that change in teacher knowledge and skills is a long and time-consuming process (Fullan, 1991). It can also be said that although different data collection tools were used to reveal and observe the PTs' knowledge and skills in this study, it was not easy to make inferences about their development. For instance, although changes in subject matter knowledge were observed and reflected in their practice, these changes were not consistently observed in subsequent implementations. Though they gained awareness about formulating questions in doing statistics, they experienced difficulties even in the last lesson study cycle. Hence, it becomes evident that long-term studies are essential to comprehensively elucidate the evolution of teacher knowledge.

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Statements of publication ethics

We hereby declare that the study has not unethical issues and that research and publication ethics have been observed carefully.

Author contribution statements

This study was a part of PhD dissertation of first author conducted under the supervision of second author.

Researchers' contribution rate

This study was conducted and reported with equal collaboration of the researchers.

Ethics Committee Approval Information

This study was created from the first author's PhD dissertation and the dissertation has ethical approval.

Approving Institution Name: Hacettepe University University Ethics Committee

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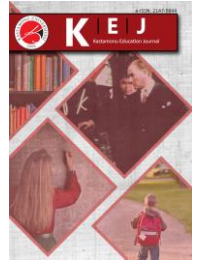
Examination of Peer Bullying and Sense of Loneliness in Secondary School Students in Terms of Various Variables

Ortaokul Öğrencilerinde Akran Zorbalığı ve Yalnızlık Duygusunun Çeşitli Değişkenler Açısından İncelenmesi

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Abstract

Purpose: This study aimed to examine peer bullying and loneliness levels of secondary school students in terms of various variables.

Design/Methodology/Approach: The study included 823 middle school students in the 5th, 6th, 7th, and 8th grades during the autumn semester of the 2021-2022 academic year. A correlational survey model was used as the research approach. The Peer Bullying Scale and the Loneliness Scale for Children were used to collect data.

Findings: The findings indicated that feelings of loneliness increased as peer bullying increased among secondary-school students. Gender-based differences were evident in the levels of loneliness and bullying. Additionally, there was a significant difference in loneliness levels according to the school type, grade level, parent's education level and mother's employment status.

Highlights: Furthermore, a significant disparity was observed in the bullying subdimension based on the mother's employment status. Conversely, there wasn't significant correlation between father's employment status and student's level of peer bullying and loneliness.

Öz

Çalışmanın amacı: Bu çalışmada ortaokul öğrencilerinin akran zorbalığı ve yalnızlık düzeylerinin çeşitli değişkenler açısından incelenmesi amaçlanmıştır.

Materyal ve Yöntem: Çalışmaya 2021-2022 eğitim-öğretim yılı güz döneminde 5, 6, 7 ve 8. sınıflarda öğrenim gören 823 ortaokul öğrencisi dâhil edilmiştir. Araştırma yaklaşımı olarak ilişkisel tarama modeli kullanılmıştır. Veri toplamak için Akran Zorbalığı Ölçeği ve Çocuklar İçin Yalnızlık Ölçeği kullanılmıştır.

Bulgular: Bulgular, ortaokul öğrencileri arasında akran zorbalığı arttıkça yalnızlık duygularının da arttığını göstermiştir. Cinsiyete dayalı farklılıklar yalnızlık ve zorbalık düzeylerinde belirgindir. Ayrıca, okul türü, sınıf düzeyi, ebeveynin eğitim düzeyi ve annenin çalışma durumuna göre yalnızlık düzeylerinde anlamlı bir fark bulunmuştur.

Önemli Vurgular: Ayrıca, zorbalık alt boyutunda annenin çalışma durumuna göre anlamlı bir farklılaşma gözlemiştir. Buna karşılık, babanın çalışma durumu ile öğrencilerin akran zorbalığı ve yalnızlık düzeyleri arasında anlamlı bir ilişki bulunmamıştır.

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INTRODUCTION

Peer-bullying is a common problem in modern educational settings. It is the violent action of one student toward another, where there is an imbalance of power (Çankaya, 2011; Bjereld et al., 2020). As defined in further detail, bullying involves negative behaviors or acts that are purposefully performed by a more powerful person or people towards a weaker person or victim, with the intention of instilling fear or anxiety in victims and showing consistency over time within the same group (Olweus, 1993). The main underlying causes of peer bullying include the bully's need to feel more powerful and superior to other students, their need for violence to solve problems, and their conviction that the victim deserves to be bullied (Genç, 2007). Despite the fact that there are numerous definitions of the term, there is no universal consensus on it (Slattery et al., 2019; Younan, 2019).

The dimensions of peer bullying can be divided into two primary categories: direct and indirect bullying (Olweus, 1993). Direct bullying involves explicit attacks, mocking, and verbal abuse, whereas indirect bullying refers to behaviors that ignore or exclude the victim, which disrupts the relationship between the victim and bully. When it comes to physical bullying, this type of bullying involves actions such as pushing or hitting, causing physical harm or injury on the victim. Conversely, in verbal bullying, the bully or perpetrator makes derogatory comments, insults, or ridicules the victim. The relational part of peer bullying includes a variety of actions, such as exclusion and rumors, intended to damage the victim's relationships, social life, and sense of belonging (Bjereld et al., 2020; Wang et al., 2020).

It is important to note that the effects of bullying are not limited to the victims' school years, as victims of bullying can have long-term sociological and psychological consequences. A variety of negative emotions, including rage, powerlessness, anxiety, despair, decline in academic performance, and feelings of unworthiness, exclusion, and loneliness can be experienced by both bullies and victims (Gökler, 2009; Mutlu-Bayraktar, 2024). Peer bullying in schools can cause students to feel isolated and disconnected, leading to a sense of alienation (Duyan et al. 2010). Given that social isolation can be viewed as a form of relational bullying, it can also be classified as a component of peer bullying (Tanrıkulu et al., 2021).

Loneliness is a widespread phenomenon experienced by every individual throughout their lifetime, which can stem from various reasons, such as losing a significant person in their lives or relocating. While it may be difficult to avoid loneliness entirely, individuals can learn to live with it (Rokach & Brock, 1998). Several studies on elementary school students have found that more than 10% of them experience loneliness during their early childhood years. Young people and teenagers are also vulnerable to feelings of loneliness, with an impact ranging from 20% to 50% during the transition to adulthood (Asher & Paquette, 2022).

Haskaya (2016) found that the degree of bullying was correlated with school alienation in a study examining the relationship between school alienation and peer bullying among secondary school students. In another study investigating peer bullying among primary school students, Çankaya (2011) reported that verbal and physical bullying were the most common types of bullying predominantly experienced by male students. Additionally, Lereya et al. (2013) suggested that experiencing bullying at a young age increases the risk of self-harm in later years, and may impede the establishment of a healthy family environment.

Existing literature has revealed studies on the phenomenon of peer bullying and loneliness across the lifetime, from preschool-age children to adults. Many studies have shown changes in students' social-emotional perceptions after the pandemic (Taylor & Asmundson, 2020; Rathnayake et al., 2021). Disruption of education during this process has led to a loss of motivation among students and teachers. To handle the process with technological assistance, knowledge accumulation is necessary (Murphy, 2020). During this period, students were obligated to continue their education in front of the screens, resulting in virtual socialization and subsequent isolation (Türker & Dündar, 2020). The implications of such perceptions of peer bullying and loneliness are critical. Furthermore, studies investigating peer bullying and loneliness among secondary school students with diverse adolescent developmental characteristics are limited.

The goal of this study was to examine the peer bullying and loneliness situations of secondary school students in terms of various variables after the pandemic by reviewing the literature and evaluating relevant research results. For this purpose, the following research questions were identified.

Purpose of Research and Research Questions

1. Is there a significant relationship between peer bullying and loneliness among secondary school students?

2. Do peer bullying and loneliness levels of secondary school students differ significantly by gender?

3. Do peer bullying and loneliness levels of secondary school students differ significantly according to their grade levels?

4. Do peer bullying and loneliness levels of secondary school students differ significantly according to school type?

5. Do peer bullying and loneliness levels of secondary school students differ significantly according to the education level of the mother?

6. Do peer bullying and loneliness levels of secondary school students differ significantly according to the education level of their fathers?

7. Do peer bullying and loneliness levels of secondary school students differ significantly according to the working status of the father?

8. Do peer bullying and loneliness levels of secondary school students differ significantly according to the working status of their mothers?

METHOD

Research Design

This study implemented a quantitative research design that specifically utilized a relational survey model. The survey model aims to collect a large amount of information to describe a situation that has existed in the past (Fraenkel & Wallen, 2008). The person, event, connection, or object under investigation is tried to be determined in its own right, and there is no possibility of changing or affecting this existing situation in any form. By contrast, the relational survey model is used to determine the link between two or more variables, their co-changes, and the extent to which this trend exists (Kaya et al., 2012).

Participants

The research was conducted in the autumn term of the 2021-2022 academic year. The sample group was formed from 821 secondary school students studying in Adana province using a random sampling method. During the data collection phase, the scales were administered digitally. The form was sent to different schools and 823 students responded. Of these, 465 (56.5%) were girls and 358 (43.4%) were boys. In terms of grade level, 26.5% of the students were in the 5th grade, 26.5% were in the 6th grade, 28.9% were in the 7th grade, and 18.2% were in the 8th grade (see Table 1).

Table 1. Students' Gender Distribution According to Class Level.

Class Level	Girl		Boy		Total	
	f	%	f	%	f	%
5th Grade	107	13,0	107	13,0	214	26,0
6th Grade	123	14,9	96	11,6	219	26,5
7th Grade	133	16,1	106	12,8	239	28,9
8th Grade	102	12,3	49	5,9	151	18,2
Total	465	56,5	358	43,4	823	100

Data Collection Tools

Peer Bullying Scale

Kutlu and Aydın (2010) developed a 45-item scale to assess bullying and victimization among 6th grade middle school students. The scale consists of three sub-dimensions: bullies, victims and general interests. Each subscale demonstrated high internal consistency, with Cronbach's alpha reliability coefficients of .83, .86, and .70 for bully, victim, and general interest, respectively. The scale is a 5-point Likert type scale. The study found a significant relationship between the victim and bully dimensions. The final version of the scale consisted of 19 items (Kutlu & Aydın, 2010). The Cronbach alpha value was calculated as .82 for the victim sub-dimension and .87 for the bullying sub-dimension.

Loneliness Scale for Children

Kaya (2005) conducted validity and reliability studies of the scale's adaptation to Turkish. The scale was first developed for grades 3-6 and then validity and reliability studies were conducted for 7th and 8th grades. As a result of the factor analysis of the scale, the factor analysis of the 3rd and 4th grades was determined as 11 items, while the factor analysis of the 5th, 6th, 7th and 8th grades was determined as 15 items and one dimension. The scale is a 5-point Likert type scale. The internal consistency coefficient of the scale for both the grades was .87. The reliability coefficient analyzed by the test-retest method and it was calculated as .76 for 3rd and 4th grades and .87 for the 5th, 6th, 7th, and 8th grades, respectively.

Data Collection and Analysis

The scales designed by the researchers in conjunction with a personal information form were administered digitally through remote access. Participants were given a voluntary consent form and an information form before they completed the scales. Each participant took approximately 10 minutes to complete the scales. Before the study, the number of participants was determined by applying the G Power Analysis Test, and statistical analyses that were carried out based on the data obtained from the participants were determined. Normality test was performed to determine whether the data were normally distributed. With the normal distribution of the data, the percentage frequency distribution, t-test, ANOVA, and correlation analysis were performed,

and the effect levels were determined. Ethical permission to conduct this study was obtained from Istanbul University-Cerrahpasa Ethics Committee.

FINDINGS

This section presents the findings and subsequent interpretations that emerged from the investigation of the research questions.

Pearson's correlation tests were performed to examine the relationships between victimization, bullying, and loneliness scores (Research Question 1). Table 2 shows a significant positive correlation between victimization and bullying scores of secondary students (r = .527, p < .001), indicating that higher victimization scores were associated with higher bullying scores. Additionally, a significant negative correlation emerged between victimization and loneliness scores (r = -.465, p < .001), suggesting that students experiencing more victimization also reported higher levels of loneliness. Finally, a significant negative correlation was found between bullying and loneliness scores (r = -.209, p < .001), implying that increased bullying was associated with greater loneliness

Table 2. Correlation Test Results on Peer Bullying and Loneliness Emotion Levels in Secondary School Students.

Variable	Victim	Bullying	Loneliness
Victim	-		
Bullying	.527[**]	-	
Loneliness	-.465[**]	-209[**]	-
Mean	17.99	12.70	52.22
SD	4.26	2.45	6.79
Minimum	8.00	6.00	24.00
Maximum	37.00	30.00	63.00
Variable	Victim	Bullying	Loneliness
Victim	-		
Bullying	.527[**]	-	
Loneliness	-.465[**]	-209[**]	-
Mean	17.99	12.70	52.22
SD	4.26	2.45	6.79

Minimum	8.00	6.00	24.00
Maximum	37.00	30.00	63.00

**p<.001.

When the results of the Independent Sample t-test for the second research question were examined, a significant difference was observed between peer bullying scores according to gender (t_{821}=4.22, p<.05). According to these results, it was concluded that the mean score of male students (M=18.69) was higher than that of female students (M= 17.44). As a result of this analysis, Cohen's d value of 0.302 indicates that it is moderately effective. In addition, there was a significant difference between genders in terms of bullying scores, which is another subdimension of peer bullying (t_{821}=3.57, p<.05). According to this result, the mean bullying score of boys (M=13.05) was higher than the mean bullying score of girls (M=12.43). As a result of this analysis, the effect size was determined as Cohen's d 0.243, which was found to be moderate. Loneliness scores showed a significant difference according to gender (t_{821}= 2.59, p<.05). In line with these results, the mean loneliness scores of male students (M =52.91) were higher than those of female students (M=51.68). Cohen's d value for this analysis was calculated as 0.191. The effect of gender on loneliness was also examined.

Table 3. Independent Sample t-Test Results Regarding the Gender of Bullying, Victim and Loneliness, Sub-Dimensions of Peer Bullying in Secondary School Students.

	Gender	n	M	SD	*t*	df	*p*
Victim	Girl	465	17.44	3.60			
					4.22	821	.000
	Boy	358	18.69	4.90			
Bullying	Girl	465	12.43	1.86			
					3.57	821	.000
	Boy	358	13.05	3.01			
Loneliness	Girl	465	51.68	6.93			
					2.59	821	.010
	Boy	358	52.91	6.54			

In the analysis of secondary school students' victimization and bullying scores, which are sub-dimensions of peer bullying, no significant difference was found according to grade level (p>.05, Table 5). However, there was a significant difference in loneliness scores according to grade level (p<.05, F=5.995). There was a significant difference between the 5th grade loneliness mean score (M= 53.79) and 6th grade mean score (M= 52.19) in favor of 5th grade, between 6th grade mean score (M= 52.19) and 7th grade mean score (M= 51.43) in favor of 6th grade, and between 7th grade mean score (M= 51.43) and 8th grade mean score (M= 51.28) in favor of 7th grade (Table 4). There was a moderate effect (η^2= .056) between the grade level of secondary school students and their loneliness scores.

Table 4. Results of Bullying and Victim Bullying and Loneliness, Sub-Dimensions of Peer Bullying in Secondary School Students According to Class Levels.

Score	n	M	sd
Grade Level			
	214	53.79	5.79
5.th Grade			
Loneliness	219	52.19	6.47
6.th Grade			
	239	51.43	7.34
7.th Grade			
	151	51.28	7.29
8.th Gradee			
	823	52.22	6.79
TOTAL			

Table 5. ANOVA Results of Secondary School Students' Bullying and Victim and Loneliness in Relation to Class Levels.

Variable	Group	SS	df	MS	F	p	η^2	*Fark*
Victim	GA	44.811	3	14.937	0.821	.483	.022	
	Gİ	14905.112	820	18.199				
		14949.922	823					
Bully	GA	19.532	3	6.511	1.084	.355	.019	
	Gİ	4917.719	820	6.005				
		4937.252	823					
Loneliness	GA	814.638	3	271.546	5.995	.000	.056	5>7
								5>8
	Gİ	37097.671	820	45.296				
		37912.309	823					

For the analysis of another research question, it was observed that there was no significant difference in the victimization and bullying scores according to school type, which are sub-dimensions of peer bullying (p>.05, Table 6). In contrast, there was a difference in loneliness scores according to school type ($t_{821}=2.38$, p<.05). According to these results, the mean loneliness score of private school students (M=54.51) was higher than that of the public-school students (M=52.08). According to the effect size analysis, Cohen's d value was 0.380, which was found to be moderate.

Table 6. Independent Sample t-Test Results of Bullying and Victim and Loneliness as Sub-Dimensions of Peer Bullying in Secondary School Students by School Type.

	School Type	n	M	SD	*t*	df	*p*
Victim	State	776	18.01	4.23			
			17.61				
					0.79	821	.537
	Private	44		4.71			
Bully	State	776	12.68	2.33			
					-0.85	821	.395
	Private	47	13.00	3.90			
Loneliness	State	776	52.08	6.81			
					2.38	821	.017
	Private	47	54.51	5.97			

According to the ANOVA test conducted for the fifth research question, it was observed that the level of mother's education did not affect the victimization and bullying scores of secondary school students (p>.05, Table 7). However, a significant difference was found in terms of loneliness scores according to the mother's education level (p<.05, Table 8). The loneliness score of students whose mother's education level was higher (M=53.76) was higher than that of students whose mother's education level was primary school (M=51.95). The mean loneliness score of the students whose mother's education level is primary school (M=51.95) is significantly higher than the loneliness score average (M=51.69) of the students whose mother's education level is secondary school (Table 7).

Table 7. Results Related to the Mother's Education Level of Bullying and Victim and Loneliness as Sub-Dimensions of Peer Bullying in Secondary School Students.

Loneliness Scores	N	M	SD
Primary Education	455	51.95	7.02
Secondary Education	216	51.69	6.66
Higher Education	152	53.76	6.04
TOTAL	823	52.22	6.79

Table 8. Results Related to the Mother's Education Level of Bullying and Victim and Loneliness as Sub-Dimensions of Peer Bullying in Secondary School Students.

	VK	KT	sd	KO	F	p	η²	Difference
Being Victim	GA	24.886	3	12.443	0.684	.505	.022	
	Gİ	14925.036 14949.922	820 823	18.201				
Bullying	GA	9.756	3	2.476	0.412	.663	.019	
	Gİ	5133.016 5142.772	820 823	6.015				
Loneliness	GA	11.86.979	3	226.398	4.956	.007	.056	Higher Education> Primary Education Primary Education > Secondary Education
	Gİ	39174.9708 40361.949	820 823	45.682				

No significant difference was found in secondary school students in terms of victimization and bullying according to fathers' education levels (p>.05, Table 9). However, a significant difference was found between the loneliness scores of secondary school students according to the father's educational level (p>.05, F= 7.247, Table.10). Between the loneliness scores of students whose fathers' education level was higher education (M= 53.76) and the loneliness scores of the students whose fathers' education level was secondary education (M= 51.95), the score of the student whose father is a graduate of higher education is high. It was found that the loneliness score average of students whose fathers' education level was secondary school (M= 51.95) and the loneliness point average of students whose father's education level was primary school (M= 51.69) was higher than that of students whose father was a secondary school graduate (Table 9). According to the father's education level, the loneliness scores of secondary school students had a moderate effect size statistically (η2= .065).

Table 9. Results Related to Father's Education Level of Bullying and Victimization and Loneliness as Sub-Dimensions of Peer Bullying in Secondary School Students.

Loneliness Score	N	M	SD
Primary Education	340	51.42	7.27
Secondary Education	278	52.12	6.73
Higher Education	205	53.68	5.76
TOTAL	823	52.22	6.79

Table 10. ANOVA Test Results of Bullying and Victim and Loneliness as Sub-Dimensions of Peer Bullying in Secondary School Students according to Father's Education Level.

	VK	KT	sd	KO	F	p	η^2	*Difference*
Being Victim	GA	91.630	3	44.815	2.528	.080		
	Gİ	14858.293	820	18.120				
Bullying	GA	12.035	3	6.018	1.002			
	Gİ	4925.216	820	6.006		.368		
Loneliness	GA	658.469	3	329.234	7.247			Higher Education> Primary Education > Secondary Education
	Gİ	37253.840	820	45.432		.001	0.65	

For another research question, no significant difference was found between peer bullying and loneliness levels of secondary school students in terms of the working status of the mother (p>.05, Table.11).

Table 11. Independent Sample t-Test Table of Bullying, Victim and Loneliness as Sub-Dimensions of Peer Bullying in Secondary School Students in Relation to Father's Employment Status.

	Father's Employment Status	n		ss/SD	*t*	sd/df	*p*
Being Victim	Yes	727	17.89	4.18	-1.681	821	.145
			18.67				
	No	96		4.80			
Bullying	Yes	727	12.73	2.49	0.871	821	.068
	No	96	12.50	2.09			
Loneliness	Yes	727	52.35	6.73	1.526	821	.158
	No	96	51.22	7.18			

The t-test results for the last research question showed a significant difference between the peer bullying scores according to the working status of the participants' mothers (t_{821}=6.909, p<.05). The mean victimization score of students whose mothers were employed (M= 12.92) was higher than that of students whose mothers were unemployed (M= 12.63). According to the obtained Cohen's d value of 0.107, the effect size could be classified as low (Table.12).

Table 12. Independent Sample t-Test Table of Bullying, Victim and Loneliness as Sub-Dimensions of Peer Bullying in Secondary School Students in Relation to Mother's Employment Status.

Variable	Mother's Employment Status	n		ss/SD	t	sd/df	p
Being Victim	Yes	196	18.04	4.61	1.411	821	.235
			17. 97				
	No	627		4.15			
Bullying	Yes	196	12.92	3.13	6.909	821	.009
	No	627	12.63	2.19			
Loneliness	Yes	196	52.45	6.63	0.315	821	.575
	No	627	52.14	6.84			

DISCUSSION

Bullying is a widespread problem that is characterized by deliberate, sustained hostility and an unequal power relationship between the perpetrator and the victim (Yury et al., 2013). Being bullied by peers at school can have various consequences for students. Peer victimization contributes to adverse health and well-being outcomes among students (Rigby, 2003). The studies have shown that bullied students are more prone to mental health problems, substance abuse, and problems in their academic lives (Pham & Adesman, 2015) while some children display resilience and recover from bullying relatively unaffected (Ismaili, 2014). Furthermore, the adverse effects of bullying have been found to continue into adulthood (Ismaili, 2014). In addition, there is a higher likelihood that those who engage in bullying behavior will continue to engage in anti-social and violent behavior in their adult lives (Rigby, 2003). It is evident that the possibility of serious consequences, including suicide in extreme situations, emphasizes the importance of addressing this issue in educational settings (Ismaili, 2014; Pham & Adesman, 2015). The aim of the present study was to examine the phenomenon of peer bullying and loneliness among secondary school students in relation to a number of variables. This section will present the findings of the study.

The primary school period is mostly under the supervision of parents (Zerinou et al., 2020). On the other hand, the middle school years are a time when children have their own choice of peers for communication and interaction and the peer influence become more prominent (Wang & Eccles, 2012). During this period, some of the students speak out about the bullying they are being subjected to, but most of the time they are reluctant to speak out for fear of being isolated (Dake, et al., 2003). The psychological and social dynamics of bullying form the basis of this phenomenon. Those who have been subjected to bullying may believe that disclosing their experiences will result in feelings of further isolation and a heightened hostility from their peers. A fear of potential marginalisation or retaliations resulting from the disclosure of bullying may lead to continued silence on the part of those subjected to it. This perpetuates the victimisation cycle. Reluctance to report instances of bullying may therefore be attributed to the fear of potential consequences (McDougall & Vaillancourt, 2015). In line with that, in the present study, a positive relationship was found between peer bullying and levels of loneliness among secondary school students. Based on this finding, it can be concluded that an increase in peer bullying leads to an increase in loneliness. Acquah and colleagues (2016) found that adolescent loneliness increased the risk of victimization by their peers, with social loneliness being a stronger predictor than emotional loneliness. In a 2021 meta-analysis, Fitriah and colleagues observed that bullying significantly elevated the likelihood of loneliness among adolescents. Pavri (2015) investigated the bidirectional relationship between loneliness and peer victimization, concluding that children who are lonely are more vulnerable to bullying, whereas chronic victimization can lead to an increase in loneliness. These studies highlight the importance of addressing bullying and loneliness in adolescents to promote positive social and emotional outcomes.

Previous studies revealed that there was a significant gender difference in peer bullying (Carbone-López et al., 2010; Lehman, 2014). The findings of the present study are consistent with those of previous studies. The findings of the present study shows

that boys were more likely to be exposed to peer bullying than girls at the school setting. A large number of studies have reported results that contradict the present findings (Bayraktar, 2009; Craig & Pepler, 2003). It was concluded that boys are more likely to engage in bullying actions because they are prone to violence and want to show their power and courage to their peers (Rauste-von Wright, 1989). In addition, in the gender-based comparison, the mean score for boys was higher than that for girls. Numerous studies have also reported similar results (Duyan et al. 2010; Certel et al. 2016). On the other hand, there are also studies in which loneliness levels of female students were high (Karakuş, 2012), and no significant difference was found (Eldeleklioğlu, 2008; Çeçen, 2008). The reason for the differences between the results of the studies can be explained by the fact that the sample groups were at different age levels and that these studies were conducted in different cultural settings and geographies. In addition, girls specifically tend to engage in more indirect forms of bullying such as social isolation and spreading rumours, whereas boys are more likely to engage in physical bullying. Furthermore, the discrepancies in the results may be attributed to the gender-based differences in the types of bullying behaviours exhibited by students (Atik, 2006; Carbone-López et al., 2010).

When the loneliness scores of students were analyzed in terms of their grade levels, we observed a significant difference. The highest loneliness scores were observed in 5th grade students, whereas the lowest average score was observed in 8th grade students. This can be interpreted as students felt lonelier in the first year, they started secondary school and that this feeling gradually decreased towards the end of their secondary school years due to the gradual improvement of peer interactions and friendship formation. In contrast to our finding, other studies did not find any significant differences in the level of loneliness in terms of class levels or age variables (Çakır & Oğuz, 2017).

When the school types were analyzed, a significant difference was observed in terms of loneliness levels. This difference was interpreted as students studying in a private school having a considerably higher average loneliness score than students studying in public schools. The findings of the study conducted by Ayas and Piskin (2011) with high school students revealed that students from vocational high schools were the most frequently victimised group, whereas those from private high schools constituted the greatest number of bullies. In comparison to the other categories, the Anatolian high school students experienced the least victimisation and had a smaller group of bullies. Anatolian high schools in Turkey are distinguished by their high academic standards, selective admissions policies, and a curriculum that frequently includes advanced courses and foreign language study. The results are not in line with another study that children's experiences of bullying did not vary by school type. Similarly, the size of the school did not affect students' bullying behaviour, as students' experience of bullying was similar in small, medium, and large schools (Lodge & Bexter, 2012). In Turkey, private schools are likely to be relatively small in size. An interpretation of the present findings suggests that school size and social structure may have an impact on the experiences of secondary school students in Turkey with regard to bullying, in contrast to the situation in other countries.

A significant difference was found in the relationship between loneliness scores and maternal education level. The loneliness level of the mother's child who graduated from higher education was found to be the highest, while that of the mother's child who graduated from secondary education was found to be the lowest. When the literature is examined, results in the opposite direction are found (Yılmaz, et al., 2008; Körler, 2012). Moreover, a significant difference was found in the relationship between loneliness scores and fathers' educational levels. While the loneliness level score of children whose fathers graduated from higher education was the highest, that of children whose fathers graduated from primary education was the lowest. As the father's educational level increased, the child's loneliness score also increased. Studies parallel to the results of this study can be found in the literature (Albayrak, 2012; Arıman, 2007). However, there are also studies with findings contrary to those of this study (Körler, 2012; Eni, 2017). A higher level of education among parents is associated with a greater probability of providing their children with the social and emotional skills that are negatively associated to bullying behavior of the children (Tattum & Herbert, 1997). In addition, these earned skills, in turn, would reduce levels of loneliness levels of their children. The fact that the findings differ from expectations also shows us that there could be other dynamics affecting parent-child interaction. The variation in results based on the education levels of mothers and fathers in these studies might be attributed to global changes, their impact on children, and the cultural and social differences within the study group. In addition, the fact that children spend more time on computers, phones, and tablets in today's world may be rethe cause of an increase in loneliness scores (Ertemel & Aydın, 2018; Lissak, 2018).

Another important finding of the present study was that there was no significant difference in exposure to peer bullying in terms of fathers' employment statuses. The literature shows contradictory findings. Looking at the literature, in the study examining the father's employment status of young people together with the tendency to violence, it was found that students whose fathers were unemployed were more prone to engage in violent actions and being a bully (Özgür et al., 2011). In low-income families, instability in parents' employment may be a barrier to healthy investment in social capital for children's outcomes (Christie-Mizell, 2004). It has also been demonstrated that when fathers engage in full-time or overtime work while their children believe that they do not spend sufficient time with their father, the likelihood of bullying behavior displayed is increased (Christie-Mizell et al., 2011). Another study found that children whose fathers reported that their family experienced adverse situations, including parental distress, hostility, or harsh disciplinary practices, were more likely to engage in bullying behaviors (de Vries et al., 2017).

Children and young people at the bottom and the highest end of the family income scale are more likely to be involved in bullying than their peers in the middle-income group, with children on low incomes being the most likely to be involved in bullying (Christie-Mizell, 2004).These findings suggest that fathers' stress or negative emotions related to their work situation are reflected in their interactions with their children which in turn can be influential on their children's bullying behavior against their peers.

Additionally, a difference was found between mothers' employment status and bullying. It was observed that children whose mothers worked engaged more in bullying actions. Family income might play an important role both in the initiation of bullying and in the level of bullying over time (Christie-Mizell, 2004). The working status of the mother, her material wealth, causes the child to feel psychologically stronger (Enderstein & Boonzaier, 2015; McNeill, 2004), which in turn causes the child to feel stronger in general. Nevertheless, the mother's working life may influence the child's behavioral issues. This emphasizes the necessity for working mothers to effectively manage their professional and familial responsibilities to ensure the well-being of their children (Jacob, 2016).

Based on the results of the present study, several recommendations are proposed with the intention of addressing peer bullying among secondary school students. In order to provide students with a better awareness of the problem and techniques for prevention and intervention, it is first advised that information seminars on peer bullying be held. School counselors should also be proactively educating parents about peer bullying, with the intention of encouraging a team approach to solving the issue. It is also recommended that the number of social events for students be increased, as these activities have the potential to reduce instances of bullying and strengthen peer relationships. In our study, we found some contradictions between our results and previous findings in the literature. A further study should be conducted in order to gain a more in-depth understanding of the phenomenon of student loneliness and to identify the underlying causes of peer bullying. Such studies would provide valuable insights into the root causes of these issues and inform more effective interventions.

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Statements of publication ethics

We hereby declare that the study has not unethical issues and that research and publication ethics have been observed carefully.

Examples of author contribution statements

B.B. and D.M.B. conceived of the presented idea. B.B. developed the theory and performed the computations. B.B. and A.S.T. verified the analytical methods. D.M.B. supervised the findings of this work. All authors discussed the results and contributed to the final manuscript.

Researchers' contribution rate

The study was conducted and reported with equal collaboration of the researchers.

Ethics Committee Approval Information

Ethics committee approval for this study was obtained from Istanbul University-Cerrahpaşa Social and Human Sciences Research Ethics Committee (dated 12.04.2022 and numbered E-74555795-050.01.04-392098).

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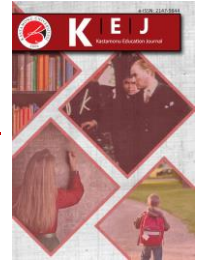
The Effects of Online Applications in English Vocabulary Learning: Quizlet Application

İngilizce Kelime Öğrenmede Online Uygulamalarin Etkisi: Quizlet Uygulamasi

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Abstract

Purpose: The main purpose of this study is to analyze the impact of the Quizlet application, a computer-aided vocabulary learning tool widely recognized as an online flashcard application, on the development and retention of English vocabulary among students learning English as a foreign language.

Design/Methodology/Approach: The data were obtained from 34 fifth-grade students studying English as a foreign language during 2019-2020 academic year at Yediiklim Secondary School in Karesi district of Balıkesir province. The research was conducted using a quantitative research method within quasi-experimental design without pre-test post-test control group. Quantitative data was collected through pre and post vocabulary achievement tests, retention test and scale. While word tests aim to measure students' vocabulary acquisition, the retention test aims to measure students' retention of vocabulary. The Quizlet Attitude Scale was also used to obtain opinions about Quizlet. Quantitative data were analyzed statistically in SPSS Statistics.

Findings: As a result of the analysis, the findings show that there is a significant difference between Quizlet and test scores. According to the results of the survey, it is concluded that the students developed positive perceptions about the use of the Quizlet program.

Highlights: In the light of these findings, it is recommended to use computer-based vocabulary learning tools as a student-centered and effective teaching technique in foreign language teaching and to expand their use.

Öz

Çalışmanın amacı: Bu çalışmanın temel amacı, yaygın olarak kullanılan ve çevrimiçi flashcard uygulaması olarak bilinen bilgisayar destekli kelime öğrenme aracı Quizlet uygulamasının, İngilizceyi yabancı dil olarak öğrenen öğrencilerin İngilizce kelime dağarcıklarının gelişimi ve kalıcılığı üzerindeki etkisini analiz etmektir.

Materyal ve Yöntem: Veriler, 2019-2020 eğitim-öğretim yılında Balıkesir ili Karesi ilçesi Yediiklim Ortaokulu'nda yabancı dil olarak İngilizce öğrenen 34 beşinci sınıf öğrencisinden elde edilmiştir. Araştırma, ön test-son test kontrol grupsuz yarı deneysel desen kapsamında nicel araştırma yöntemi kullanılarak gerçekleştirilmiştir. Nicel veriler, ön ve son kelime başarı testleri, kalıcılık testi ve ölçek aracılığıyla toplanmıştır. Kelime testleri öğrencilerin kelime edinimini ölçmeyi amaçlarken, kalıcılık testi öğrencilerin kelime bilgisini akılda tutma düzeylerini ölçmeyi amaçlamaktadır. Quizlet hakkındaki görüşleri almak için Quizlet Tutum Ölçeği de kullanılmıştır. Nicel veriler SPSS İstatistik programında istatistiksel olarak analiz edilmiştir.

Bulgular: Analiz sonucunda elde edilen bulgular, Quizlet ile test puanları arasında anlamlı bir fark olduğunu göstermektedir. Anket sonuçlarına göre, öğrencilerin Quizlet programının kullanımına ilişkin olumlu algılar geliştirdikleri sonucuna varılmıştır.

Önemli Vurgular: Bu bulgular ışığında, bilgisayar tabanlı kelime öğrenme araçlarının yabancı dil öğretiminde öğrenci merkezli ve etkili bir öğretim tekniği olarak kullanılması ve kullanımının yaygınlaştırılması önerilmektedir.

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INTRODUCTION

One of the main objectives of education is to enable individuals to discover their abilities and powers, as well as to embrace and apply technological developments to become innovative individuals. This objective inevitably necessitates the integration of technology into education (Aydın, 2003), leading to the emergence of various learning tools and approaches that can be integrated into the learning and teaching processes (Kassim & Ali, 2007). With the advancement of technology, the demands, motivations, and interests of students have changed, and these modern students are described differently by various researchers. Prensky (2001) referred to them as "Digital Natives," Jones, Ramanau, Cross, and Healing (2010) called them "Net Generation," and Oblinger (2008) labeled them as "Y Generation." These learners are born and raised in the technology age, constantly exposed to technology, making them more adaptable to new developments. This enables them to respond positively to technology and become more motivated through it. Therefore, teachers should make efforts to provide learning materials containing some technological tools to students (Granito & Chernobilsky, 2012). Similarly, Koehler and Mishra (2005) emphasized that teachers seek alternative ways, integrated with technology, to offer effective learning opportunities to students.

In modern foreign language education, digital instructional methods have started to replace traditional classes, as they allow teachers to enhance their teaching methods or techniques (Golonka et al., 2014). This need brings forth the concepts of ComputerAssisted Language Learning (CALL) and Mobile-Assisted Language Learning (MALL). Computer-assisted language learning refers to language learning supported by technology and computers, while mobile-assisted language learning refers to language learning supported by technology and mobile devices (Kern, 2006). In foreign language learning, alongside the four basic skills of reading, writing, speaking, and listening, vocabulary learning plays a significant role in the second language/foreign language acquisition process. Vocabulary learning is considered a fundamental building block of a language's structure (Nation, 2001; Francis & Simpson, 2009) and an essential element for communication. It is emphasized that communication can be partially achieved without grammar, but nothing can be conveyed without words (Wilkins, 1972).

Learning a foreign language is not an easy task for students (Gass & Selinker, 2008). According to Barr (2016), learners of a new language struggle to understand the words and meanings of the target language, and there is a correlation between this difficulty and the limited size of students' vocabulary. Similarly, the literature indicates that vocabulary learning significantly contributes to language learning and is considered the most challenging part for language learners (Çelik & Toptaş, 2010; Read, 2000). Studies also suggest that students need to find their own learning methods to "learn, acquire, understand, retain, recall, use, and expand" words, which is an individual responsibility (Siriwan, 2007). Therefore, given the close relationship between our era and technology, it is crucial to incorporate technology into the vocabulary learning process to make it easier, more enjoyable, and more motivating for learners.

English language learners, particularly, need to learn thousands of words to become proficient in the target language. However, they often do not have enough time to learn vocabulary in the classroom, especially during formal education hours. The question of which ways students learn vocabulary best still remains a matter of debate. Various techniques, such as objects, pictures, word flashcards, gestures, and mimics, are used in vocabulary teaching. In this study, the Quizlet application was chosen as an efficient flashcard tool with many users and various activities including games, exercises, tests to measure English language learners' vocabulary acquisition and retention, which has been the subject of various research and has shown positive effects on participants. Quizlet, as an online flashcard program, has been chosen for its appeal to the younger generation's interest in technology and its widespread use as an effective teaching method. Based on this information, the following questions are sought to be answered in the study:

1. Does the way units are processed and the use of the Quizlet program affect students' vocabulary learning?

2. Does the way units are processed and the use of the Quizlet program affect the retention of learned words?

3. Does vocabulary learning and word retention level predict students' attitudes toward Quizlet?

LITERATURE REVIEW

Vocabulary in Foreign Language Learning

Thoughts are conveyed through language, and words that enable the development of these thoughts are accepted as meaningful sounds or sound unions, words and lexicon. (TDK, 2020). Vocabulary, on the other hand, is defined differently by various researchers. Graves and Watts-Taffe (2002) define vocabulary as the entire stock of words known to an individual or related to a specific knowledge. Neuman and Dwyer (2009) describe vocabulary as the words one needs to know to communicate effectively in speaking and listening. Burns (1972) defines vocabulary as the stock of words used by a person, in a class or in a specific field. Vocabulary knowledge is considered an essential building block of language, and vocabulary learning is seen as the process of developing an understanding of these building blocks (Ramos, 2015). Furthermore, Nation (2001) characterizes the relationship between vocabulary knowledge and language use as "complementary," stating that vocabulary knowledge enhances language use, and language use, in turn, increases vocabulary knowledge.

Researchers like Laufer (2003), Maximo (2000), Read (2000), Gu (2003), Nation (2006), and Marion (2008) emphasize that vocabulary acquisition is necessary for effective second language use and plays a significant role in creating oral and written texts. Güney and Aytan (2014) also support this view, stating that vocabulary is both cultural and social capital for individuals. In other words, the power in all four language skills lies in mastering words (Göçer, 2009), and words are considered an essential component of both oral and written communication (Yağcı, Katrancı, Erdoğan, & Uygun, 2014). It is stated that vocabulary acquisition has become a prerequisite for foreign language learning and most of the studies carried out to cope with the foreign language vocabulary learning process by being analized the nature of words, their pronunciation, spelling, prefixes and suffixes in depth, and it is necessary to give importance to vocabulary in order to gain mastery in the language (Nation, 2001). According to Nation (2001), for a person to claim that they know a word, they should possess the following information about that word:

- Pronunciation of the word
- Spelling of the word
- Meaning of the word
- Grammatical properties of the word
- Frequency of use of the word
- Collocations (word combinations) of the word
- Contextual (content) factors necessary for forming meaningful sentences with the word

Başöz (2013) states that vocabulary knowledge is the fundamental component that provides the infrastructure for students to have good listening, speaking, writing, and reading skills. Webb (2009) also points out that expanding vocabulary is crucial for mastery of a language for English language learners. Mizumoto and Takeuchi (2009) indicates that the task of vocabulary learning for foreign language learners is more challenging since they cannot acquire words naturally, and they have limited opportunities to use the acquired words in social contexts. Overcoming these difficulties, as in other areas, necessitates adopting a fully integrated vocabulary learning approach that keeps up with educational innovations and aligns with the thinking and achievements of modern era. Given this information, it is evident that students need a vast vocabulary to communicate successfully in a second or foreign language, and learning new words in a second or foreign language is a challenging task. Therefore, finding the most effective way to encourage vocabulary knowledge and improve foreign language vocabulary directly has become essential topics in the field of foreign language teaching and learning (Kawauchi, 2008).

Techniques Used in Vocabulary Teaching

Susanto and Fazlind (2016) present the techniques used in vocabulary teaching as follows:

• Teaching Vocabulary with Objects: This technique involves presenting target words by showing real objects (Takač and Singleton, 2008).

• Teaching Vocabulary through Expressions, Gestures, and Mimics: Teaching using gestures, hand movements, facial expressions, pantomime, body movements, etc.

• Teaching Vocabulary by Predicting from Context: This technique involves teaching target words by having students predict the correct word based on the context in which it appears.

• Teaching Vocabulary through Activities, Spelling, and Active Participation: This technique is used to help students learn and retain new information by familiarizing them with the form and sound of words or vocabulary items (Thornbury, 2002).

• Teaching Vocabulary through Listing and Antonyms: Listing is a collection of elements that include all target words and subheadings in a complete and sequential manner.

• Teaching Vocabulary through Drawings and Pictures: This technique involves teaching target words by drawing pictures or writing and drawing the names and pictures of words on vocabulary flashcards.

Vocabulary Learning Through Online Vocabulary Flashcards

Today, the integration of multimedia with learning and teaching English has become an important trend (Hu & Deng, 2007). In recent years, multimedia technologies such as audio, video, slides and such materials have been included in the language and vocabulary learning process, and this integration increases students' interest in learning (Constantinescu, Kim, Chan, & Feng 2007; Abraham, 2008). Moreover, with the popularity of advanced technologies like computers, games, and the internet, their effectiveness in language and vocabulary learning is observed, both individually and in combination with multimedia tools (Martins, Steil, and Todesco, 2004; Ma and Kelly; 2006; Blake, 2013; Ko and Goranson, 2014). For example, in Wang, A. Y., Thomas, M. H., Inzana, C. M., and Primicerio, L. J.'s (1993) study, students using the vocabulary learning app "Learn British English WordPower" showed higher engagement and motivation in the experiment group. Ma and Kelly (2006) emphasize that by using the WUFUN software, students have learned a significant amount of vocabulary in both individual and classroom use. McLean,

Hogg, and Rush (2013) state that the online vocabulary learning program Word Engine has a positive impact, and the participants in the study point out that Word Engine contributes to learners' receptive vocabulary knowledge. Crandell (2017) aims to increase accessibility to the English language for learners and teachers by creating the first 500 words of the Academic Word List in an online vocabulary flashcard program called Quizlet. The study shows that the vocabulary sets created on Quizlet provide significant benefits for foreign language vocabulary learning, and Quizlet users not only see the meanings of the words but also have the opportunity to listen to the pronunciation of the words through this digital vocabulary learning tool.

Quizlet (Online Flashcard Application) Program Content

The learning tool provided by the website http://quizlet.com.tr, operating in Turkey, is described on its mission page as serving in 18 different languages in 130 countries and having ownership of user-created flashcard study sets exceeding 50 million users every month and 300 million sets that can be used free of charge (Quizlet, 2021). Lees (2013) lists the features available in the Quizlet application as follows:

- A list of words that can be shuffled, reversed, pronounced, and edited when needed.

- Flashcards for words that can be shuffled, labeled, pronounced, played automatically, or manually scrolled.

- A learning software containing modules for the learning, usage, and spelling of words with multiple repetitions and performance tracking.

- A spelling software that pronounces the words in the word list, tests your writing and has multiple-choice translations, true-false questions, highlights and corrects mistakes.

- A testing software containing modules that test the student with editable and trackable writing, multiple-choice translations, and true-false questions.

- A matching game called Scatter, where users compete against each other and create a competitive environment by dragging and dropping words in their native language over the words in the target language.

- A game called Space Race, where users compete against each other and create a competitive environment by writing the translation of the given word to earn scores and level up.

At Tamagawa University in Japan, a study is being conducted with 32 low-level first-grade students learning English as a foreign language. In this study, Barr (2016) asks students to use the Quizlet application and concludes that students' achievements significantly increased as a result. Additionally, the opportunity for students to learn independently is presented as another positive aspect of the program. Crandell (2017) aims to increase accessibility to the Academic Word List by creating the first 500 words in Quizlet, an online flashcard program, and aims to reach users' opinions. It is reported that the word sets created on Quizlet provide significant benefits in learning foreign language vocabulary and Quizlet users can not only see the meanings of words but also listen to their pronunciations through this digital vocabulary learning tool.

Boyce (2016) conducted an experimental study with 7 students who experienced difficulties in learning terminologies related to the science lesson. The researcher analizes the students' academic performance, their behavior during the learning process, and student satisfaction with games. The study highlighted that students with learning disabilities in acquiring science-related vocabulary showed a positive attitude towards the Quizlet application, and their grades improved. On the other hand, Brown and Pallitt (2015) find in their research that students had the opportunity to share data sets with their classmates, and the use of this online program indirectly played a role in increasing sharing and collaboration among students. These findings are consistent with Rossing, Miller, Cecil, and Stamper's (2012) study, which concluded that mobile device application usage encourages active participation in the learning environment among students.

METHOD/MATERIALS

The research was conducted using a quantitative research model. Quasi-experimental design without pre-test post-test control group was used as a quantitative research method. The quasi-experimental design is preferred when the necessary controls of a true experimental design cannot be provided or when they are not sufficient to be implemented (Karasar, 2009). Due to the small number of participants, a control group was not included in the study.

Participants

The research sample consisted of 34 fifth-grade students attending Balıkesir Yediiklim Bengi Secondary School during the 2019-2020 academic year. The average age of the participants was 11. The sample of the study was selected through non-probability convenient (availability) sampling method. The students had 18 hours of English lessons per week and the units of these courses are focused on all of the reading, listening, speaking and writing skills.

Data Collection and Analysis

The vocabulary items selected for this study consist of 100 target words, 25 words for each of the four units, from the Oxford Publications English Plus 1 Student Book. The difficulty level of the taught words in each unit is balanced. These words were

prepared in Quizlet with their Turkish meanings and example sentences. Teaching vocabulary process lasted for 2 weeks for each unit and 8 weeks in total for all four units.

Data were collected through vocabulary tests and a scale. Before starting each unit, students' relevant unit vocabulary knowledge was measured using a pre-test. After the unit was taught, all students worked on the unit's vocabulary using the Quizlet online flashcard tool. To measure students' vocabulary knowledge after the units were covered and Quizlet was used, a post-test was used at the end of each unit. Four pre-tests and 4 post-tests were conducted in total. Additionally, a retention test with 50 questions was given before the application process started to measure students' word recall and the level of vocabulary retention. The mentioned retention test was the first test given to students before any learning activity took place. The same test was applied 2 weeks after the posttest of the related unit as a retention test. At the end of the application process, In order to determine the participants' attitude towards Quizlet, Ranalli's Post Project Survey adapted by Bilcan (2019) was applied.. The data obtained were statistically analysed in SPSS Statistical Programme.

It was determined that the data obtained from the scales showed normal distribution according to the skewness and kurtosis values (Table 1).

Table 1. Skewness and Kurtosis Values of Scale Scores Used in the Study

	Initial	Unit 1 Pretest	Unit 1 Posttest	Unit 2 Pretest	Unit 2 Posttest	Unit 3 Pretest	Unit 3 Posttest	Unit 4 Pretest	Unit 4 Posttest	Total Score of Pre-Tests	Total Score of Post-Tests	Retention Test	QUIZLET Attitude Scale
Skewness	.149	.036	-.548	.166	-.538	-.159	-.528	-.263	-.944	-.331	-.963	-.586	-.242
Kurtosis	-.778	-.871	-.734	-.967	-1.066	-.988	-1.100	-.697	.840	-.342	.299	-.866	-.671

'Repeated Measures Anova' analysis was applied to test the consistency of the instruments prepared to measure students' knowledge and retention levels. In order to determine the difference in the knowledge level of the students before and after each unit was processed and Quizlet application was used, pre-test mean scores and post-test mean scores were compared with the 'Paired Sample T Test'. 'Pearson correlation analysis' was used to determine the relationship between the two measurements. 'Multiple Linear Regression Model' was used to examine the effect of learning and retention levels on student attitudes towards Quizlet application.

FINDINGS

In this part of the study, tables are used to present and explain the results after the analyses.

Comparison of Unit 1 Pre-Test and Post-Test Scores

First, the results of the pre- and post-tests for Unit 1 were compared. The results of the analysis are given in the table below.

Table 2. Comparison of Unit 1 Pre-Test and Post-Test Scores using the Paired Sample T-Test

Measurement	Mean	SD	SE	Min	Max	T	P	df	R	Impact
Unit 1 PreTest	24.00	7.785	1.335	10	38	48.947	0.00	33	0.35	0.99
Unit 1 PostTest	92.94	6.480	1.111	78	100					

The statistical analysis revealed a significant difference between the average scores of the pre-test ($\bar{x}$=24.00 ∓ 7.79) and post-test ($\bar{x}$=92.94 ∓ 6.48) for Unit 1 (t(33)=-48.95; p<0.05). This indicates that the Quizlet application has been effective in helping students learn the words taught in Unit 1. The impact (e=0.99) is considerably high. The substantial difference in the mean scores between the two measurements (68.94) and the range of values (minimum: 10-78, maximum: 38-100) further support this finding.

Comparison of Unit 2 Pre-test and Post-test Scores

Table 3. Comparison of Unit 2 Pre-test and Post-test Scores Using the Paired Sample T-test.

Measurement	Mean	SD	SE	Min	Max	Mean difference	T	P	df	R	Impact
Unit 2 Pre Test	23.53	7.220	1.238	12	38	67.12	47.485	0.00	33	0.48	0.99
Unit 2 Post Test	90.65	8.721	1.496	74	100						

There was a statistically significant difference between the Unit 2 pre-test mean (x̄= 23.53 ∓ 7.22) and post-test mean (x̄=90.65 ∓8.72) (t(33)=-47.49; p<.05). According to this, Quizlet application was effective in terms of learning the words taught in Unit 2. This effect (e=0.99) is quite high. The high mean difference between the two measurements (67.12) and the minimum (12-74) and maximum (38-100) values are indicative of this. In addition, the correlation between the two measurements (r= 0.48) is at a moderate level (Table 3). In other words, the probability that those who scored high in the pre-test are the same as those who scored high in the post-test is moderate. In other words, those who scored high in the pre-test also scored high in the post-test. Those who scored low in the pre-test increased their scores in the post-test.

Comparison of Unit 3 Pre-test and Post-test Scores

Table 4. Comparison of Unit 3 Pre-test and Post-test Scores Using the Paired Sample T-test

Measurement	Mean	SD	SE	Min	Max	Mean difference	T	P	df	R	Impact
Unit 3 Pre Test	25.65	6.41	1.10	14	36	66.06	56.242	0.00	33	0.58	0.99
Unit 3 Post Test	91.71	8.18	1.40	76	100						

The pre-test average (x̄= 25.65 ± 6.41) and the post-test average (x̄= 91.71 ± 8.18) show a statistically significant difference (t(33) = -56.24; p < 0.05). Accordingly, the Quizlet application has proven to be effective in helping students learn the words taught in unit 3. This effect size (e=0.99) is quite high. The considerable difference in the mean scores between the two measurements (66.06) and the range of minimum (14-76) to maximum (36-100) values further indicate this effectiveness.

Comparison of Unit 4 Pre-Test and Post-Test Scores

Table 5. Comparison of Unit 4 Pre-Test and Post-Test Scores with Paired Sample T-Test"

Measurement	Mean	SD	SE	Min	Max	Mean difference	T	P	df	R	Impact
Unit 4 Pre Test	28.29	5.93	1.02	16	38	64.94	60.20	0.00	33	0.48	0.99
Unit 4 Post Test	93.24	6.40	1.10	74	100						

"The pre-test average (x̄= 28.29 ± 5.93) and the post-test average (x̄= 93.24 ± 6.40) show a statistically significant difference (t(33) = -60.20; p < 0.05). Accordingly, the Quizlet application has proven to be effective in helping students learn the words taught in unit 4. This effect size (e=0.99) is quite high. The considerable difference in the mean scores between the two measurements (64.94) and the range of minimum (16-74) to maximum (38-100) values further indicate this effectiveness.

Comparison of Total Pre-Test Scores and Total Post-Test Scores

Table 6. Comparison of Total Pre-Test Scores and Total Post-Test Scores with Paired Sample T-Test"

Measurement	Mean	SD	SE	Min	Max	Mean difference	T	P	df	R	Impact
Pre-Tests Total Score	25.37	3.59	0.62	16.50	31.00	66.76	84.49	0.00	33	0.45	0.99
Post-Tests Total Score	92.13	4.92	0.84	81.00	99.00						

The average of total pre-test scores (x̄= 25.37 ± 3.59) and the average of total post-test scores (x̄= 92.13 ± 4.92) show a statistically significant difference (t(33) = -84.49; p < 0.05). Accordingly, processing of the unit and the Quizlet application have proven to be effective in helping students learn the words targeted for teaching in all four units. This effect size (e=0.99) is quite high. The considerable difference in the mean scores between the two measurements (66.76) and the range of minimum (17-81) to maximum (31-99) values further indicate this effectiveness.

The Effect of Unit Processing and Quizlet Application on Learning Retention: Comparison of Initial Test Scores with Retention Test Scores

Table 7. Comparison of Initial Test Scores and Retention Test Scores with Paired Sample T-Test.

Measurement	Mean	SD	SE	Min	Max	Mean difference	T	P	df	R	Impact
Initial Test	23.65	6.63	1.14	12	36	69.00	53.051	0.00	33	0.36	0.99
Retention Test	92.65	6.76	1.16	78	100						

The average of initial test scores (x̄= 23.65 ± 6.63) and the average of retention test scores (x̄= 92.65 ± 6.76) show a statistically significant difference (t(33) = -53.05; p < 0.05). Accordingly, the Quizlet application has proven to be effective in helping students remember the words taught in the four units after the initial test. This effect size (e=0.99) is quite high. The considerable difference in the mean scores between the two measurements (69.00) and the range of minimum (12-78) to maximum (36-100) values further indicate this effectiveness.

Comparison of Total Post-Test Scores with Retention Test Scores

Table 8. Comparison of Post-Tests' Total Scores and Retention Test Scores with Paired Sample T-Test.

Measurement	Mean	SD	SE	Min	Max	Mean difference	T	P	df	R	Impact
Post-Tests Total Score	92.13	4.92	0.84	81.00	99.00	0.51	0.382	0.705	33	0.12	0.07
Retention Test Total Score	92.65	6.76	1.16	78.00	100.00						

There was no statistically significant difference between the average of the total scores of the four post-tests (x̄= 92.13 ± 4.92) and the average of the retention test scores (x̄= 92.65 ± 6.76) (t(33) = -0.382; p > 0.05). Thus, no statistically significant effect (e=0.07) of the time elapsed until the retention test on forgetting the learned words could be detected (p> 0.05). It was observed that the students did not forget the words they learned in the four units until the retention test was conducted.

The Effect of Vocabulary Learning and Retention Levels on Students' Quizlet Attitudes

Table 9. Descriptive Statistics of Post-Test Total Scores - Retention Test Total Scores – QUIZLET Attitude Scale Score.

Measurement	Mean	SD	SE	Min	Max
Post-Test Total Scores	92.13	4.92	.844	81.00	99.00
Retention Test Total Scores	92.65	6.76	1.16	78.00	100
QUIZLET Attitude Scale Total Score	85.03	8.14	1.40	68.00	99.00

After each use of Quizlet, the total scores of the four post-tests, which were used to measure students' vocabulary knowledge level, ranged from a minimum of 81.00 to a maximum of 99.00, with an average of 92.13 ± 4.92. On the other hand, the students' retention test total scores ranged from a minimum of 78.00 to a maximum of 100, with an average of 92.65 ± 6.76 (Table 9). As observed, there are students who achieved scores close to or at the highest possible scores on all three measurement tools. The average total scores of the post-tests and retention test are quite close to each other.

Students' Responses to the Quizlet Attitude Scale

Table 10. Frequency Distribution and Descriptive Statistics of Quizlet Attitude Scale Items.

Scale Items	1		2		3		4		5		Mean
	N	%	N	%	n	%	N	%	n	%	
15. I think Quizlet can help improve my vocabulary learning.	0	0.00	0	0.00	0	0.00	11	32.35	23	67.65	4.68
18. There has been an increase in the number of English words I have learned.	0	0.00	0	0.00	0	0.00	13	38.24	21	61.76	4.62
3. I clearly understood the purpose of using Quizlet	0	0.00	1	2.94	0	0.00	13	38.24	20	58.82	4.53
17. I learn words more easily with Quizlet.	0	0.00	0	0.00	0	0.00	16	47.06	18	52.94	4.53
1. Using Quizlet to learn vocabulary is a lot of fun.	0	0.00	0	0.00	1	2.94	15	44.12	18	52.94	4.50
16. With the help of Quizlet, my performance increased in English lessons.	0	0.00	0	0.00	1	2.94	16	47.06	17	50.00	4.47
13. Using Quizlet to learn vocabulary is motivating.	0	0.00	0	0.00	0	0.00	19	55.88	15	44.12	4.44
12. Learning vocabulary with Quizlet is different and fun.	0	0.00	0	0.00	0	0.00	20	58.82	14	41.18	4.41
7. I liked the 'Match' game the most.	0	0.00	3	8.82	0	0.00	12	35.29	19	55.88	4.38
11. I learned many words by looking at the example sentences.	0	0.00	1	2.94	3	8.82	12	35.29	18	52.94	4.38
10. Quizlet's smartphone app is also useful to have.	0	0.00	0	0.00	7	20.59	10	29.41	17	50.00	4.29
20. Such web tools should be included in language teaching.	0	0.00	0	0.00	6	17.65	13	38.24	15	44.12	4.26
4. Pictures and example sentences were enough for me to remember the words.	0	0.00	1	2.94	4	11.76	15	44.12	14	41.18	4.24
14. I have learned how to learn words.	0	0.00	0	0.00	5	14.71	17	50.00	12	35.29	4.21
5. I did not encounter any technical difficulties while using Quizlet.	1	2.94	4	11.76	1	2.94	13	38.24	15	44.12	4.09

Scale Items	1		2		3		4		5		Mean
	N	%	N	%	n	%	N	%	n	%	
19. I will continue to use Quizlet after this lesson.	0	0.00	3	8.82	7	20.59	9	26.47	15	44.12	4.06
2. Quizlet was easy to use.	0	0.00	4	11.76	3	8.82	15	44.12	12	35.29	4.03
6. I played the games in Quizlet with the "easy, medium, hard" options set.	0	0.00	3	8.82	10	29.41	9	26.47	12	35.29	3.88
8. I liked the 'Gravity' game the most.	0	0.00	7	20.59	4	11.76	9	26.47	14	41.18	3.88
9. I liked the 'QuizletLive' contest the most.	5	14.71	5	14.71	12	35.29	4	11.76	8	23.53	3.15

According to Table 10, students have given the highest score (x̄=4.68) to the item '15. I think Quizlet can help improve my vocabulary learning'. None of the students gave a score lower than four. Additionally, the second and third items to which students gave the highest scores are '18. There has been an increase in the number of English words I have learned'. and '3. I clearly understood the purpose of using Quizlet'.

On the other hand, the item to which students gave the lowest score is '9. I liked 'QuizletLive' competition the most (x̄=3.15)'. Additionally, the second and third items to which students gave the lowest scores are '8. liked 'Gravity' game the most (x̄=3.88)' and '6. I played the games in Quizlet with the "easy, medium, hard" options set (x̄=3.88)'.

Students' Quizlet Attitudes Based on Post-Test Total Scores and Retention Test Results

Table 11. Students' Quizlet Attitudes Based on Post-Test Total Scores and Retention Test Results.

Predictor Variables	At 95% Confidence Interval		Standard B	ß	SE	T	p	R	R²	F
	Lower Limit B	Upper Limit B								
Post-Tests Total Score	0.191	1.270	0.730	0.441	0.265	2.760	0.010			
								0.468	0.169	4.347
Retention Test Scores	-0.259	0.526	0.133	0.111	0.192	0.693	0.493			

According to Table 11, the total post-test scores, which are obtained from the results of the four post-tests measuring students' vocabulary learning levels, are a significant predictor of students' Quizlet attitudes ($F_{(2,33)}$ = 4.35; $p < 0.05$). The vocabulary learning level (post-test total scores) explains 17% of the variance in students' Quizlet attitudes. For each one-point increase in the post-test total scores, the average Quizlet Attitude Scale score increases by 0.73 points. The effect of the post-test total scores within a 95% confidence interval ranges from 0.19 to 1.27 (Table 10). As seen in Table 10, the retention test score alone does not have a significant effect on students' Quizlet attitudes ($t_{(33)}$ = 0.69; $p > 0.05$).

CONCLUSION AND RECOMMENDATIONS

In the context of the first sub-problem of the study, the effect of unit processing and the Quizlet program on learners' vocabulary learning was examined. As indicated by the results of Pearson correlation analysis, there are statistically significant differences between 'pre-tests and post-tests' and between 'pre-test total scores' and 'post-test total scores'. Therefore, it can be said that the Quizlet application is effective and supportive in helping students learn the words taught in the units. This finding aligns with the idea that 'Quizlet can be a powerful vocabulary learning tool when used correctly and has the potential to improve

students' test scores and word acquisition' (Wright, 2016) and 'using flashcards is an effective way for students to enhance their vocabulary' (Laufer, Meara, & Nation, 2005).

Additionally, when looking at the correlation between pre-tests and post-tests, it can be observed that the correlation between pre-test and post-test scores in unit 1 (r = 0.35) is low. This low level indicates that learning takes place after the unit is covered and the Quizlet applications, even for students who knew the words very little before. The correlation between the pre-tests and post-tests in units 2, 3, and 4 is at a moderate level. Furthermore, it is concluded that the correlation between the pre-test total scores and post-test total scores is also at a moderate level. In other words, the likelihood of those who received high scores in the pre-tests being the same individuals as those who received high scores in the post-tests is moderate, and those who did not score high in the pre-test also achieved high scores in the post-test. In summary, those who scored low in the pre-tests increased their scores in the post-tests. Based on the above information, it can be said that the Quizlet program has a positive effect on vocabulary learning. The study concludes that Quizlet provides significant benefits for vocabulary learning, facilitates vocabulary learning, and contributes positively to participants' perceptions of learning foreign language vocabulary and English lessons.

In the context of the second sub-problem of the study, the effect of the method of teaching the unit and the Quizlet program on vocabulary retention is investigated. The analysis of the first test scores and retention test scores revealed a statistically significant difference between the students' first test score average ($\bar{x}$= 23.65 ± 6.63) and the retention test score average ($\bar{x}$= 92.65 ± 6.76). Based on this information, it can be stated that the Quizlet application has a strong effect on students' recall of the words covered after the first test. Additionally, the low correlation (r = 0.36) between these two measurements indicates that there is a weak relationship between word recall and prior knowledge, meaning that students' prior knowledge of the words before the first test is not strongly linked to their word recall later.

The analysis comparing the post-tests total scores and retention test scores indicates that no statistically significant difference was found between the mean scores of the four post-tests ($\bar{x}$= 92.13 ± 4.92) and the retention test ($\bar{x}$= 92.65 ± 6.76). In other words, it is concluded that participants did not forget the words they have learned throughout the four units until the retention test was administered. Additionally, the insignificant correlation (r = 0.12) between these two measurements suggests that the variation observed in the scores of each post-test is not related to the retention test scores. The difference observed in the post-test scores of students did not have any relation with their retention test scores.

In the context of the research question, in addition to these analyses, 85.30% of the students showed a positive attitude towards the statement "Pictures and example sentences were sufficient for me to remember the words" in the "Quizlet Attitude Scale." This indicates that integrating pictures, sounds, and example sentences into the vocabulary learning tool has a significant impact on students' ability to remember the words.

In the context of the third sub-problem of the study, the effect of students' vocabulary learning and retention levels on their attitudes towards the Quizlet program was analized. Multiple linear regression analysis was conducted to test the impact of students' vocabulary learning level, represented by the total scores of the final tests, on their Quizlet attitudes. The analysis results revealed that the total scores of the final tests, which measure students' vocabulary learning level, are a significant predictor of their Quizlet attitudes (F(2,33)=4.35; p<0.05). However, the retention test score alone did not have a significant effect on students' attitudes towards the Quizlet program .

It can be said that the Quizlet programme has a positive effect on vocabulary learning. It is possible to see various studies related to this benefit in the literature. For example, Stroud (2014) states that compared to traditional methods, computer-based vocabulary learning programs such as Quizlet increase cognitive, affective and behavioural development and retention of words even more. In addition, Barr (2016), Dizon (2016), Pham (2016) and Crandell (2017) also investigated the effect of Quizlet on vocabulary development. In the study, it is concluded that Quizlet provides significant benefits to vocabulary learning, the programme facilitates vocabulary learning and contributes positively to the participants' perceptions towards vocabulary learning in a foreign language and English language course.

This positive effect of Quizlet on vocabulary recall is in line with Kalecky's (2016) study, which argues that words are remembered in the long term with the use of Quizlet. This view is supported by the study of Özer and Koçoğlu (2017), who revealed the positive effect of the use of visual and auditory methods on word retention. When the literature is examined, various studies revealing the positive effect of Quizlet on the retention of target words are encountered. Wright (2016) states that creating flashcards by adding pictures, sounds and definitions of target words is much easier on the Quizlet platform. In addition, the programme keeps students motivated as it provides instant feedback and appeals to visual, auditory and kinesthetic learners (Cunningham, 2017). The fact that Quizlet allows participants to learn the correct pronunciation of words enables them to easily grasp the words and their definitions (Özer & Koçoğlu, 2017).

It is clearly seen that the Quizlet programme improves vocabulary learning in English and contributes to foreign language learning. As stated by Baturay, Yıldırım, and Daloğlu (2009) and Kocaman (2015), computer-assisted instruction and digital vocabulary learning tools positively affect students' vocabulary acquisition, enable participants to develop positive attitudes and increase the retention of words.

According to the Quizlet Attitude Scale, all students believe that the Quizlet program improves vocabulary learning and increases their knowledge of English words. Additionally, all participants view the program as easy to use and find it motivating,

engaging, and enjoyable. Except for one student, all students express that their English course performance improved with the help of Quizlet. One participant responded neutrally to this statement, indicating that they had no opinion on this matter. Furthermore, the majority of students (88.23%) state that they learn many words by looking at example sentences. Twenty-seven students believe that having a Quizlet mobile application is useful, while the rest do not have an opinion, possibly due to accessing Quizlet through the web.

Moreover, most students report that they play games by adjusting the difficulty level (easy, medium, hard), while others play the games with the default "medium" option. The "matching" game is the most popular among the students, followed by the "Gravity" game. Regarding the "QuizletLive" game, only 35.29% of the students express that they like it, with 12 students having no opinion, and 10 students being certain that it is not their favorite game.

In summary, the research findings suggest that the Quizlet online vocabulary application is effective in students' vocabulary acquisition and contributes significantly to vocabulary retention. Additionally, students develop positive attitudes towards the Quizlet Attitude Scale. The integration of games and study modes in the Quizlet program appears to motivate students and make vocabulary learning enjoyable. Quizlet, as a digital flashcard application, is proven to be a valuable method for 5th-grade elementary students to improve their vocabulary acquisition and enhance their perception of English lessons.

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| Research Article / Araştırma Makalesi|

Analysis of Sait Faik Abasıyanık's "Sarnıç" Book in the Context of Values Education

Sait Faik Abasıyanık'ın "Sarnıç" Kitabının Değerler Eğitimi Bağlamında İncelenmesi [1]

Selen Özcivanoğlu[2], **Yıldız Kocasavaş**[3]

Abstract

The aim of this study is to analyze the stories of Sait Faik Abasıyanık, one of the most important story writers of the Republican Period, in the context of values education. The research model is document analysis, one of the qualitative research methods. In this context, the storybook "Sarnıç" written by Sait Faik Abasıyanık was selected as the study document of the research. The "Schwartz Values Classification" (1992), which covers a wide distribution of core values accepted in the international literature and includes the relationships between values in a near-universal way, was used as the data collection tool of the research. Descriptive analysis was used to analyze the data obtained. The sub-values of the value types in the Schwartz values classification of the storybook "Sarnıç" were found in all 16 stories (f:133). The sub-values of the value types in the Schwartz value classification in the storybook "Sarnıç" (f:133) are Power (12), Achievement (2), Hedonism (11), Stimulation (8), Self-direction (8), Universalism (35) Benevolence (30), Tradition (8), Conformity (6) and Security (8). When the values contained in the stories within the scope of the research are examined, it is observed that significant information has been reached in the context of values education. When Sait Faik's book "Sarnıç", which draws a different profile at first glance, is examined in the context of values education, the inclusion of many values leads one to think of his value consciousness and knowing his people and society well.

Öz

Bu araştırmanın amacı, Cumhuriyet Dönemi'nin en önemli öykü yazarlarından biri olan Sait Faik Abasıyanık'ın "Sarnıç" eserindeki öykülerinin değerler eğitimi bağlamında incelenmesidir. Araştırmanın modeli, nitel araştırma yöntemlerinden doküman incelemesidir. Bu bağlamda, Sait Faik Abasıyanık'ın kaleme aldığı "Sarnıç" isimli öykü kitabı araştırmanın çalışma dokümanı olarak seçilmiştir. Araştırmanın veri toplama aracı olarak uluslararası alanyazında kabul edilen temel değerlerin geniş bir dağılımını kapsayan ve değerler arasındaki ilişkileri evrensele yakın bir şekilde içine alan "Schwartz Değerler Sınıflandırılması" (1992) kullanılmıştır. Elde edilen verilerinin çözümlenmesinde, betimsel analizden yararlanılmıştır. "Sarnıç" öykü kitabının Schwartz değerler sınıflandırılmasında yer alan değer tiplerinin alt değerlerine 16 öykünün (f:133) tamamında rastlanılmıştır. "Sarnıç" (f:133) öykü kitabında Schwartz değerler sınıflandırmasında yer alan değer tiplerinin alt değerleri; Güç (12), Başarı (2), Hazcılık (11), Uyarılım (8), Öz Yönelim (8), Evrenselcilik (35) İyilikseverlik (30), Gelenek (8), Uyum (6) ve Güvenlik (8)'tir. Araştırma kapsamındaki öykülerin içerdiği değerler incelendiğinde, değerler eğitimi bağlamında oldukça önemli bilgilere ulaşıldığı gözlenmektedir. İlk bakışta farklı bir profil çizen Sait Faik'in, "Sarnıç" kitabına değerler eğitimi bağlamında bakıldığında, pek çok değerin yer alması, ondaki değerbilirliği, insanını, toplumunu iyi tanımayı düşündürmektedir.

INTRODUCTION

In every place and period of human existence, various value judgments have been found and will continue to exist. Therefore, values education is important. Especially since the 1990s, there has been a period in which values education has become more prominent in Turkey. Different views or sociological approaches to values education or justifications for their demands differ. It is clear that this is due to the nature of education. Although education is defined as "intentional and desired behavior change", it is based on different reasons in social, economic, political, moral, religious and pedagogical contexts, which behaviors are "desired" and "intentional" due to its essence and nature. Because the starting point of values is human behavior and it is people who assign value to these behaviors (Tezcan, 2018: 61). When the literature is examined, it is seen that the reasons for values education are gathered in different dimensions. In general, it is possible to collect the variables that require values education in different dimensions such as social, psychological, economic, political, philosophical and cultural.

Although there are differences in the definitions of values, which are the subject of study in different disciplines, there are some basic features of values that are agreed upon. Halstead and Taylor (1996:21) define values as principles, convictions or ideals that guide behavior, are taken as criteria in decision-making and evaluation, and have become part of personality or individual identity. There are definitions within the disciplines of sociology and psychology that are close to this definition proposed in the context of education. For example, Kluckhohn (1962) defines values as concepts that enable choice among available behaviors, and Rokeach (1973) conceptualizes values as enduring beliefs about which behaviors or goals are preferable to others. In Schwartz Value Theory (1992; Schwartz et al., 2016:34), which has been widely used as a basic framework in social science research in recent years, values are similarly defined as cognitive structures used as criteria for evaluating behaviors and events.

Based on the basic definitions of the concept of values, it is also possible to mention the common characteristics of values proposed in different approaches. First, values are cognitive representations (Rokeach, 1973; Schwartz, 1992). These representations are conceptual structures consisting of basic beliefs that include evaluations of the extent to which behaviors, goals or attitudinal objects in general are likable, desirable, good-bad, beautiful-ugly, right-wrong. Second, values are one of the main factors underlying the separation or differentiation of individuals, groups or cultures. Accordingly, rather than valuing different values, individuals, groups or cultures differentiate on the basis of which of the universal values they value more than others. For example, intercultural studies show that national cultures around the world can be grouped in a way that reflects the religious structure of the majority in parallel with the proximity of the geographical location of the countries and in line with the changes in the importance they attach to values (Schwartz, 1999, 2014:121). Third, the importance that individuals or groups place on values is a relatively permanent feature and does not change in the short term. There are various situations that sociologists and psychologists suggest for values to change. For example, individuals or societies may generate a new concept of value based on experience; mass events such as war, disaster, and revolutions may cause sudden destruction of values, or the priority of some values may change as fewer and fewer people give importance to them over time (Williams, 1979).

The Concept of Values Education

Values education is a complex and difficult process with its purpose, content, teaching principle, method, strategy, and measurement dimensions. Value is a concept used in every field due to its critical impact on process management. Therefore, values education is multidimensional. Values are used and studied in national, religious, universal, human, individual, social, economic, and political dimensions (Saltuklu, 2018:64).

Values education, on the other hand, is prepared with an attitude towards what is missing, wrong and bad in the context of education. In a way, it is the name of the process of increasing the degree of sensitivity of the individual's reactions to himself and the society, which is important for the society and the individual (Kaya & Çelebi, 2015:163). It is generally accepted that education is creating "desired" behaviors and raising people. However, values are also desired behaviors or compliance with "desired" attitudes. In this context, it is stated that values education gains strength at the intersection of these two "desired" situations.

The following opinions come to the fore in the researches or reports prepared on why values education is needed in educational institutions:

• Ensuring a social future in a desired way by providing social control is seen as a priority.

• It is aimed to make the individual a part of society by starting human education at an early age according to value judgments.

• Schools are not just simple structures where academic functions and knowledge transfer are carried out. Raising individuals who have adopted basic human values is one of the clear functions of the school, and it is ensured that the values of the society are processed here (Nalçacı, 2019:192; Akyüz, 2018:85-86).

In addition to these views, some current concrete situations or facts also necessitate values education in schools. As a matter of fact, the increase in social violence, the deterioration of peace and anarchy, and the rising trend of terrorism are among the main factors. Moral corruption and loss of working ethical values are also among the main reasons. Compliance with the rules of courtesy, providing work discipline, cleanliness, order, and moral values necessitates values education in schools (Aydın, 2017).

Schwartz's Theory of Value

Schwartz defines his theory at two different levels of analysis. The first level of analysis is cultural, and the second level of analysis is individual. Although the basic propositions of both theories are the same, the value types that distinguish individuals and cultures from each other are determined as different categories for the two analysis levels.

Schwartz's Theory for Individual Analysis Level

Within the scope of this theory, 11 value types have been proposed: power, achievement, hedonism, arousal, self-direction, universalism, benevolence, spirituality, tradition, conformity, and security. Value priority measurements made using the Schwartz Value Questionnaire in a sample of 40 different students, teachers, employees, and the general population from 20 countries showed that the values predicted to be in the spirituality value type were distributed among other value types and this value type did not emerge as an independent field. Thus, the theory was rearranged to include 10 value types based on intercultural data.
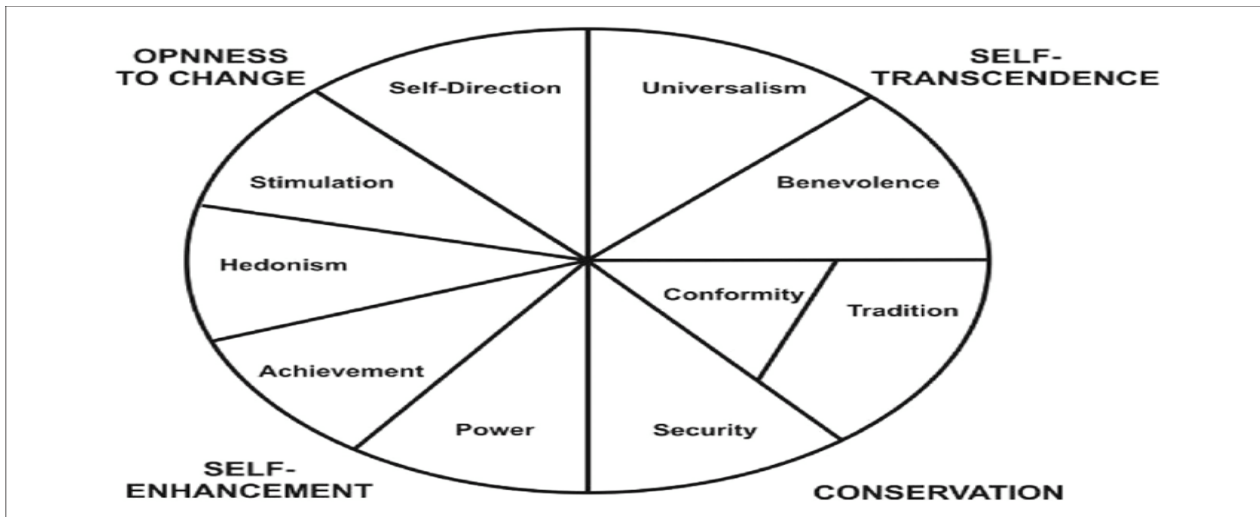
Figure 1. Circular Value Model-Individual Analysis Level (Schwartz, 1992)

Schwartz's Theory for the Level of Analysis of Culture

The theory developed by Schwartz (1994, 1997, 1999, 2014) for the level of culture analysis also preserves the basic propositions of the theory at the level of individual analysis, such as the collection of values undervalue types and the ordering of these value types on the circle plane in a motivational continuum. On the other hand, in order to distinguish cultures from each other, seven value types have been proposed in accordance with the culture analysis level instead of the value types at the individual analysis level. These are "harmony", "conservatism", "hierarchy", dominance", "emotional autonomy", "intellectual autonomy" and "egalitarianism". According to the theory, all societies need to confront some fundamental problems in order to regulate the activities of their members. Values, on the other hand, have the function of a vocabulary used to ensure communication among the members of society on these issues and to address these problems.

Figure 2. Circular Value Model-Cultural Analysis Level (Inman et al., 2017: 3)

The Importance of the Story in Transferring Values Education

Value transfer; it can be done in a social environment such as family, friend group, work, in schools, as well as through literary texts that have a fiction equipped with many values. The interaction between education and value is also seen in literature. Literature has been an important part of education by using it as an educational tool since ancient times (Çebi, 2016: 2). Educating the society through literary works and transferring the existing values of the society to the young individuals of the society has been one of the important functions of literature.

Literary writers offer solutions by dealing with different problems of society in their novels, poems, and stories. Every individual is affected by the cultural structure of the society of which he or she is a member. The cultural structure of the society is what the mother's embrace is. In this sense, the social structure can be expressed as "the body of national values". Literary works take shape according to the social structure in which these values are presented, and serve as a tool in shaping and conveying this structure (Güleryüz, 2013: 127). Because literary products, which make important contributions to the emotional, social and linguistic development of individuals and play an important role in enriching their imagination and gaining a taste for art, are also important in terms of culture and value transfer. In addition to universal values such as honesty, diligence, respect, justice and responsibility, qualified literary works can also help individuals transfer the national values of the society in which they live (Başkan, 2019:73) In addition, individuals can learn the cultural elements of the society they live in, such as traditions and customs, from literary works appropriate to their level and thus enrich their limited life experiences.

Sait Faik's Language, Expression, Style Characteristics and His Place in Turkish Literature

Sait Faik, who is one of the writers of Turkish literature in the Republican period, is one of the writers who have an important place in the formation of "modern Turkish storytelling" with his stories. Sait Faik, the starting point of his works, looks at them not from the stereotyped social values, but with the feelings and values of love, respect, pity and tolerance that he produces (Yardım, 2002: 67).

Among the most striking features of Sait Faik's stories, which are of great importance for Turkish storytelling, are the use of a beautiful Turkish and an understandable language in his works, and the fact that he bases all his works on human and human love. It is Sait Fait Abasıyanık who brought the "ordinary man" in the society into Turkish literature and showed his unknown aspects (Naci, 2003:2).

Sait Faik hardly mentions the feeling of hatred in his works. Even when he is overwhelmed by the city with a great inner distress, he takes refuge in writing and immediately gets away from the feeling of hatred. Just like this, fighting is not very common in Sait Faik's works. The author, whose philanthropic aspect cannot be ignored, adhered to love not only in his works but also in his own life. In some of his stories, he explains the reasons for writing, his view on literature, and makes some determinations about the critics' evaluation of his works (Çetinoğlu, 1997: 20).

The aim of this study is to analyze the stories written by Sait Faik Abasıyanık, who is thought to have opened an innovative way to Turkish storytelling by literary circles, in the context of values education. For this purpose, the problem statement of the research is given below:

• What is the importance of the stories written by Sait Faik Abasıyanık in terms of values education?

METHOD

Model of the Research

The model of this research is document analysis, one of the qualitative research methods. "Document analysis includes the analysis of written materials containing information about the facts and events targeted to be investigated" (Yıldırım and Şimşek, 2018: 217). According to Corbin and Strauss (2008), document analysis, as in other qualitative research methods, requires the examination and interpretation of data in order to make sense, gain understanding and gain empirical knowledge (Act. Bowen, 2009:28). In this context, document review can be used alone as a method in qualitative research (Yıldırım and Şimşek, 2018:219).

Working Document

In research based on document analysis, it may not be possible for all document data to be the subject of analysis as a whole. For this reason, it is tried to create a sample from the data reached (Yecke, 2005: 5). In this context, the book "Sarnıç" written by Sait Faik Abasıyanık was selected as the working document of the research.

Data Collection Tools

In the analysis of Sait Faik Abasıyanık's selected stories in terms of values education, the "Schwartz Values Classification" (1992), which covers a wide distribution of the core values accepted in the international literature and includes the relations between values in a near-universal way, was used as the data collection tool of the research. The list shown in Table 1 consists of ten sub-dimensions. Sub-values were added to the "Schwartz Classification of Values" by taking expert opinion.

Table 1. Schwartz Values Classification (According to Expert Opinion Edited Version)

Value Type	Definition	Sub-Values Contained
Power	Social position and prestige, power of control or dominance over people and resources.	To have social power, to have authority, to be rich, to protect their appearance in society, to be adopted by people.
Achievement	Personal success through demonstrating excellence according to social standards.	To be successful, to be competent, to be ambitious, to be influential, to be intelligent.
Hedonism	Peasure and sensual gratification for self.	Pleasure, enjoying life, aesthetics, happiness.
Stimulation	Excitement, novelty, challenge.	Being brave, living a changeable life, having an exciting life.
Self-Direction	Independent thought and action.	Being creative, being curious, being able to choose your own goals, being independent, having self-respect.
Universalism	Understanding, appreciation, tolerance and protection of welfare of humanity and nature.	Being open-minded, being virtuous, social justice, equality, want a world in peace, a world full of beauty, be in harmony with nature, protecting the environment, internal harmony, empathy, sensitivity, respect, being savvy, tolerance, scientificity.
Benevolence	Preservation and enhancement of the welfare of people with whom one is frequent contact.	To be helpful, to be honest, to be forgiving, to be faithful, responsibility, friendship, love, a spiritual life, a meaningful life, compassion, cooperation, loyalty.
Tradition	Respect, acceptance and commitment to established customs and ideas received from culturel tradition.	Being humble, being religious, accepting what life gives, respect for tradition, be moderation, withdraw from world affairs, share, keeping culture alive.
Conformity	Restraint of impulses likely to harm or upset others or to violate social norms.	Being kind, obedient, caring for parents and elders, to control oneself.
Security	Stability, safety and harmony of self, relationships and society.	National security, social order wanting it to last, being clean, family security, reciprocation of kindness, sense of commitment, being healthy.

Analysis of Data

Descriptive analysis was used to analyze the research data. Descriptive analysis is an approach based on explaining and interpreting the data obtained under the themes created, examining the cause-effect relationships and reaching the result (Yıldırım and Şimşek, 2018: 241).

FINDINGS

There are 16 stories in the "Sarnıç" story book and each story was analyzed according to the Schwartz Values Classification, which was corrected according to expert opinions within the scope of the research.

Sarnıç

The story begins with the narrator's memories that have left a mark on him, and continues with transitions between different memories to the present. The narrator, who recalls his high school days and the friendships he made, thinks that the whole life in front of him after high school will be better, but later realizes that it is not so. After saying that there was a gap between him and the public from time to time, that he was in luxurious restaurants and cafes and met with people from the elite in the most beautiful parts of the theaters, he also states that he was always looking to be among the people, to find modest corners. It is the people of these small and humble corners who are his friends, his companions, those he loves and even those he falls in love with. He shares their troubles and joys, talks to shepherd children, goes to free movies, spends time in meadows and neighborhood cafes. The narrator, who considers human beings worthy of all beauty and happiness in this world and is directly involved in life in every situation, questions why there are hungry, unemployed, homeless and lonely people on the streets. After his memories

flow like water into the cistern, he thinks about his current abandonment. His wife has left him and the misery he lived with her and returned to her father's house and the narrator has learned about this situation through his father-in-law's letter. He tries to get out of the situation he is in by taking refuge in his memories.

"The world was mine." (Abasıyanık, 2018: 5) says, the author spent time in poor neighborhoods while staying in luxury places, met people from all walks of life, made friends with mostly middle-class or low-income groups, and was happy to be with them. While the author's stance emphasizes the values of enjoying life, happiness, living a variable life, and being humble, the fact that his wife left him in order to avoid misery as a result of the negativities brought about by the war times leads one to think about the values of being rich, family security, and loyalty. "I was grieved by their misery. I was overjoyed with their happiness." (Abasıyanık, 2018: 4), "There was such a time that people from one party put those from the other side on greasy ropes. I felt sorry for both of them." (Abasıyanık, 2018: 5), "Man was the most beautiful, greatest and happiest creature in this world. Then why were there naked children in the street, hungry wanderers, unemployed young men, trembling villagers, old people who only loved their prayers and their grandchildren?" (Abasıyanık, 2018: 5-6) while emphasizing the values of love, sharing, empathy and sensitivity, the reader is also asked to question the values of social justice and wanting a world in peace.

The findings of the themes determined according to the sub-values of the value types included in the classification of Schwartz values in the Sarnıç (f:13) story are given below:

- Power (1) [Getting rich (1)]
- Hedonism (2) [Enjoying life (1); Happiness (1)]
- Stimulation (1) [Living a variable life (1)]
- Universalism (4) [Social justice (1); Desire for a world in peace (1); Empathy (1); Sensitivity (1)]
- Benevolence (1) [Love (1)]
- Tradition (2) [Being humble (1); Share (1)]
- Security (2) [Family security (1); Sense of Commitment (1)]

Kalorifer ve Bahar

The difference between the center and the outside of the city walls is presented in the context of transportation, economy, socio-cultural structure, language, and lifestyle in the story, which takes place in the slum on the city walls of Istanbul. In these poor neighborhoods, where everyone calls each other by nicknames, no one knows or cares about anyone's faith. Those living in these neighborhoods, where acculturation is intense, also learn the slang of the languages spoken by each other quickly. In the region where crime rate is high, illegal means of subsistence such as stealing and begging are encountered, and the children of the neighborhood are also used in these works. They are unaware of tools such as a telephone and a heater, and children learn what cinema means from the boy they call Capon. The people of the neighborhood, who are curious about the city and the opportunities provided by the city, spend time in cafes with the story of the heater told by Capon, who went to the city because he wanted to see the cinema and thus met the heater, especially in the winter season when the conditions are most difficult, and they call it the name "Kalorifer". Towards summer, children head to the city center, where transportation is very difficult; However, many of them return when winter begins, and those who do not are remembered like heroes. When the winter time comes, while the children return to the neighborhood one by one, only Capon, also known as the heater, does not come back from the city that offers him many opportunities. That's why two names belonging to the same person are referred to as heroes that year.

In the story, in the slum where everyone shares similar living conditions, no one can find anyone strange because of their language, belief or name; "sometimes a Sarı Apostol taunts a Sulu Abram in Judaism; Sometimes, a Barbunya Ahmet or Zargana Agop has a problem in Armenian." (Abasıyanık, 2018: 9) With this description, the author; emphasizes the values of love, tolerance and sharing. The fact that the difference in development between the center and the outside of the city walls is too great, that life outside the city walls has become a part of daily life with many innovations and lack of information, makes the crime ordinary, "Electricity, gasoline, central heating, telephone and tile stove were things they did not yearn for." (Abasıyanık, 2018: 11), "The buildings there are big, big, big." (Sarnıç, 2018: 12), "Some said that cinema is a huge fish, some said that it was a gypsy goldfish, some a young girl, a bright boy." (Abasıyanık, 2018: 13), "You used to go to prison from here as if you were going to the military." (Abasıyanık, 2018: 10), the reader is expected to reflect on the values of equality and social justice.

Capon, who did not want to give up on the possibilities of the city and did not return to the neighborhood, made him a hero in the eyes of the neighborhood. According to Issı (Abasıyanık, 2018: 37), "The reason that throws the Capon character, who has made himself an urbanite with his features such as curiosity, desire for adventure and courage, to the city out of curiosity and adventure, is to make himself, his friends and his neighborhood accept his individuality with his desire to compete with his friends in the neighborhood. is a concern." The values of being adopted by people, being brave, living a changeable life, being curious, being independent, being able to choose their own goals are highlighted through this character, which is identified with the heater in the story. Writer; to be in harmony with nature by presenting to the reader that every season has a beautiful side for working people, that life continues for those who are left behind despite all kinds of misery and disaster, the desire to love and energy brought by spring, nature is beautiful even with its negativities and always invites us to live, with the seasonal descriptions in the story, a world full of beauties is focused on the values of enjoying life.

The findings of the themes determined according to the sub-values of the value types included in the classification of Schwartz values in the story of Kalorifer ve Bahar (f:14) are given below:

• Power (1) [To be embraced by people (1)]

• Hedonism (1) [Enjoying life (1)]

• Stimulation (2) [Be brave (1); Living a changeable life (1)]

• Self-direction (3) [Being able to be curious (1); Being independent (1); Being able to choose their own goals (1)]

• Universalism (5) [Social justice (1); Equation (1); A world full of beauty (1); Being in harmony with nature (1); Tolerance (1)]

• Benevolence (1) [Love (1)]

• Tradition (1) [Sharing (1)]

Beyaz Altın

In this story, where the events are told differently from Sait Faik's story structure, the character of Eskicizade Nedim; represents individual ambition, greed, and selfishness that sacrifices others for their own interests. Nedim is a merchant who buys food, sends supplies to people who are starving due to the famine and misery brought about by the war period, and in return makes them do their own illegal work or make them listen to the injustices he has done patiently. At that time, when flour and bread were more valuable than human beings, Nedim's clerk could not speak out to avoid starvation, even though he witnessed all his cunning and injustices. He listens to Nedim's deceptions at the dinner table, which first brought the people in front of him to a level where he could compete and then drove them into bankruptcy, and he feels sorry for those who think Nedim is a friend without realizing that he is an enemy. After making various frauds with brokers, he accompanies Nedim, who goes to have his teeth platinum in Istanbul, with the profit he earned, thanks to him, he finds a job there. The clerk, who settled in Istanbul, sees Nedim once in a while, witnessing that his health is deteriorating and he is not at peace. He realizes that when he dies of a heart attack, no one in the town is sad, in fact, everyone knows what he did, even if they don't say it. Even the young people who knew that their teeth were gold, took the dead from the grave and removed their teeth, tied stones, and left the body in the lake, went to Istanbul, and spent the white gold in taverns.

"But back then, an ounce of unmixed flour was worth more than a twenty-year-old country boy." (Abasıyanık, 2018: 20), "In this very recent past, the hungry fed the full and the hungry died." (Abasıyanık, 2018: 20), "How could people who had nothing in their stomachs but bread distributed by the state in limited quantities think of time, say peace and war?" In the sentences (Abasıyanık, 2018: 22), it is expected that the reader will think about the values of national security and wanting a peaceful world by emphasizing the negativities brought by the war. Eskicizade Nedim's insatiability, unjust gains, sacrificing and using people for his own interests, despite all this, being unable to speak up because of his economic power, the values of having social power, being rich and being ambitious were highlighted; In the story where individual ambitions precede humanity, the sad end of Nedim who succumbs to his ambitions and the importance of a meaningful life, being honest and being virtuous are implied. "Perhaps the greatest civil servant could not eat these raki, these ribs, this fried eggplant dish, begendi, caviar. Even the geniuses who sang songs for the homeland could not eat.'' (Abasıyanık, 2018: 24), social justice and equality values are questioned. Despite having everything, the value of being healthy was emphasized with Nedim, who complained that everything he enjoyed in his last days was forbidden due to his health condition.

In the story, Istanbul is discussed as a city with educational opportunities and colorful social life. Its people are insatiable like Nedim, as in the town, the rich are very rich, the poor are very hungry, there are plenty of taverns and entertainment venues, and it is a city with young writers and poets. "Istanbul was a world. Here, hungry dogs were humanized. Next to a thousand and one Eskicizades lived a thousand and one accomplices." (Abasıyanık, 2018: 26) "Istanbul was, in short, a world. It was full of those who ate, drank and laughed. Those who did not eat, drink or laugh were in a corner; they did not eat, drink or laugh." (Abasıyanık, 2018: 27) Having found the money in the town, he is after going to Istanbul and spending his day; because women, gambling, cinema, and theater attract people to this city. In this respect, the city is identified with the value of enjoying life.

The findings of the themes determined according to the sub-values of the value types included in the classification of Schwartz values in the Beyaz Altın (f:12) story are given below:

• Power (2) [Having social power (1); Being rich (1)]

• Success (1) [Being ambitious (1)]

• Hedonism (1) [Enjoying life (1)]

• Universalism (4) [Being virtuous (1); Social justice (1); Equation (1); Desiring a world in peace (1)]

• Benevolence (2) [Being honest (1); A meaningful life (1)]

• Security (2) [National security (1); Being healthy (1)]

Bir Karpuz Sergisi

The narrator expresses the dreams of a beggar he encounters in the same mosque every season and the dialogue he has with him. While searching for melancholic corners, the person he meets in the courtyard of a mosque and kisses his hands when he

gives money makes him feel like an omnipotent person. When he chats with her, he learns that he has a dream of opening a watermelon exhibition and begins to listen to the projects in his mind; However, even though he has money, his desire to see the beauties of summer succumbs to his will that insists on his work, so he realizes that opening a watermelon exhibition will remain a dream. While watching the beauties of Istanbul with him, the narrator shares his dreams, plans to open a watermelon exhibition together, and they calculate the apprentice they will receive and the amount they will share. Accompanied by these dreams, he travels in Kumkapı, Beyazıt and Süleymaniye; they follow the ferries from the Galata Bridge.

The values of the narrator giving money to the person he met in the courtyard of the mosque, spending time with him, listening to his dreams and being a partner in his dreams, sharing and being helpful; "A whole world could have been asked of me in those few seconds of my hands being kissed. I was strong enough to create this world." (Abasıyanık, 2018: 31) to have social power, to be adopted by people; His search for melancholic corners to love and feel people emphasizes the value of love. Although the person who sleeps in the courtyard of the mosque wants to work, the desire to watch the beauties of summer dominates, his projects are always in words and he is constantly wandering around on the right and left. At the end of the story, after talking about the exhibition project, "Let's go, let's watch the ferries from the bridge. We'll both get some air." (Abasıyanık, 2018: 36) shows that he does not control himself and turns his back on the responsibilities of working.

In the story, known districts of Istanbul such as Beyazıt, Süleymaniye, Kumkapı, Galata are mentioned. Istanbul mosques are described as silent and mysterious, and it is mentioned that the orphans and homeless people live in their courtyards. "Then he thinks on the porches of mosques where little doves wander; I would just stare at Istanbul, where these bridges and miserables and ferries think and call each other. The narrator, who says (Abasıyanık, 2018: 32), emphasizes that the city integrates with its poor living in it, its ferries, mosques and bridges, and emphasizes that it has beauties to behold in all seasons. The types mentioned in the story are also swimming or bathing in Kumkapı, spending time watching the surroundings in the mosque courtyards, watching the ferries from the bridge, located near the Beyazıt pool; In short, they are melancholic types who enjoy the beauties and quiet corners of the city.

The findings of the themes determined according to the sub-values of the value types included in the classification of Schwartz values in the story of Bir Karpuz Sergisi (f:8) are given below:

- Power (2) [Having social power (1); Adopted by people (1)]
- Hedonism (1) [Enjoying life (1)]
- Benevolence (3) [Being helpful (1); Being responsible (1); Love (1)]
- Tradition (1) [Sharing (1)]
- Compliance (1) [Be able to control oneself (1)]

Mavnalar

Story is about the last evening that two friends, they are employees, spent together with the friendship they established during the time they shared the same room. Two roommates, whose working hours do not match each other very well and who do not see each other much, sometimes watch Istanbul from the Galata Curriculum on holidays and feel the desire to jump on the barges on the motorboats. Even if they do not put it into words, most of the time the same wishes pass through them. One day, a comment made by the worker on the fireman's dismissal offends his friend and prevents him from asking for help. After a while, the employee, who found a job in the glass factory, said goodbye to the worker as he would stay at his place of work, and on their last evening they watched the ferries together from Galata. For the first time, both of them do not feel like jumping on the barges, both of them are sad to say goodbye.

"On evenings like this, they would understand that each other's friendship could be trusted, that they were good friends, without speaking four or five sentences." It is understood from the expressions (Abasıyanık, 2018: 38) that the values of friendship and love come to the fore.

The findings of the themes determined according to the sub-values of the value types included in the classification of Schwartz values in the story of Mavnalar (f:2) are given below:

- Benevolence (2) [Friendship (1); love (1)]

Gece İşi

The story begins with the physical violence against a woman in a tavern and continues to be told after the person named Ömer hits the woman who implying that she is interested in men. In this noisy tavern, which is like a meeting point for people from all walks of life, even thieves and honest people, everyone continues to talk about their experiences as if nothing had happened. Ömer leaves the tavern with the two people at his table. After sending the one with feminine attitudes, they go to the place where the boats are and take the person named İdris from there, saying that it is a "night job" and go to one of the morning cafes. In this cafe, street children are half-naked and sleep in a corner, while junkies and fourteen-fifteen-year-olds sit in separate corners. Covering the street children with a rug, Ömer goes to the young Karayel and haunts him, but when he gets a backlash, he says he is joking and the four people talk about the illegal business they are going to do and go into the dark.

In the story where the narrator does not openly explain the dark deed; homeless street children, gender stereotypes against women, young people who are used for illegal work, and substance addicts are mentioned and a section of social disintegration is presented. "In this tavern, even honest people would listen to the cases of thieves and pickpockets without disgust or shudder." (Abasıyanık, 2018: 42), "Never again," he said, "don't meddle in men's business as a woman." (Abasıyanık, 2018: 42), "Two naked little people are napping on the sofa. Their nudity is visible in places, they were still cold in this rather warm coffee." (Abasıyanık, 2018: 45), "A junkie was sitting by the stove, fishing on the bridgeheads." It is understood from the statements (Abasıyanık, 2018: 46) that they refer to situations that threaten social security, young people who are used to illegal work, and that these situations are normalized by other people and that women are put into the background. The story questions the values of social justice, equality, wanting the social order to continue, and makes the man think about the position of the woman in terms of having social power.

The findings of the themes determined according to the sub-values of the value types included in the classification of Schwartz values in the Gece İşi (f:4) story are given below:

- Power (1) [Having social power (1)]
- Universalism (2) [Social justice (1); Equation (1)]
- Security (1) [Desire to maintain social order (1)]

Hancının Karısı

The narrator, who sets out with his dog to go to a village near Lake Karakurt for health reasons, thinks that everything has become alien to him, that everyone is teasing him, and finds excuses for not loving anything or anyone he sees and constructs new problems for himself in his mind. His dog, with whom he went on a long journey, is his only companion. Along the way, he always gets negative feelings and thinks about his past life in the face of nature scenes. He wants to go to a far place to find the inner peace, physiological and psychological healing he seeks. For this purpose, he stays in an inn on the road he left. While chatting with the innkeeper, he also examines his wife, whom he describes as having "young hair". The innkeeper talks about Lake Karakurt, its jealous men, the beauty of its women, and finally his private problems with his own wife. The narrator goes to sleep, surprised that even a man at the top of the mountain has troubles, and realizes that years later that night, he spends the night always waiting for the innkeeper's wife to come to him; But the woman did not come.

In the story, the narrator, who is alienated from himself and his environment due to his various problems, seeks a solution by resting his head in a distant place. "I am sick. Can I find a place to spend a few months there?" (Abasıyanık, 2018: 51) he wants to go to the place he asks for a rest and perhaps to reminisce with his longing for his past. From here, the values of commitment, being healthy and internal harmony are reached. Even though he has problems, the fact that the innkeeper's wife does not come near the narrator and remains loyal to his wife highlights the values of being loyal and being able to control himself.

The findings of the themes determined according to the sub-values of the value types included in the classification of Schwartz values in the story of Hancının Karısı (f:5) are given below:

- Universalism (1) [Inner harmony (1)]
- Benevolence (1) [Being Loyal (1)]
- Compliance (1) [Be able to control oneself (1)]
- Security (2) [Sense of commitment (1); Being healthy (1)]

Loğusa

The tragedy of a family living in a three-storey house, one of the forty-five households in Sakarya Kumköy, is told. Hasan Ağa lost his third wife when he was 70 years old, and as the fourth wife, he took Zehra, one of the young girls in the Bosnian neighborhood, which is located between the difficult roads of the village. He lives with 25-year-old Zehra on the ground floor of the house, he is offended with his son Rüstem, who lives on the second floor, and his son does not talk to his older sister, who lives on the top floor. From the bride to the sister-in-law, from the father to the son, everything is in turmoil when Hasan Ağa asks his son for help because his wife is in labor pains. No matter what Zehra and Hasan Ağa say, the argument begins and continues violently, as the household believes that the child is from someone else and is of the opinion that the 80-year-old man will not have a child. With this incident, everyone attacks each other by spewing their hatred. While Rüstem attacks his father and sister's wife with a stick, Rüstem's wife and older sister insult Zehra and beat her. At the end of the story, one of the sticks is raised to hit Zehra in the stomach.

In the story, Rüstem says, "I can't be disgraced because an eighty-year-old guy is having a child. Do whatever you want!" (Abasıyanık, 2018: 58), it is understood that he cares about the value of preserving his appearance in the society. The fact that all family members quarrel or resent each other, that they use physical and psychological violence against each other mercilessly on the pretext of an event such as a suspicious birth, the lack of unity within the family, "Outside, father and son were at each other's throats. " (Abasıyanık, 2018: 59) and (...) after looking at his brother with a spiteful eye, he ran to the room of the laboring woman and raised his stick towards the belly of the young woman." (Abasıyanık, 2018: 60) expressions show the lack of family security, compassion, tolerance, respect, being helpful, caring for parents and the elderly and make us think about these values.

The findings of the themes determined according to the sub-values of the value types included in the classification of Schwartz values in the Loğusa (f: 7) story are given below:

• Power (1) [To protect appearance in society (1)]

• Universalism (2) [Tolerance (1); Respect (1)]

• Benevolence (2) [Being helpful (1); Compassion (1)]

• Cohesion (1) [Caring for parents and elders (1)]

• Security (1) [Family security (1)]

Ormanda Uyku

The narrator, who remembers his past days when he sees the lights of the boats, has been avoiding people and dealing with his illness for two years because of the grudge and hatred inside him. Although he tries to transform into a new person from time to time, he succumbs to a kind of lack of energy, now he looks at life with love and thinks that he will find a cure even for his illness by looking lovingly at the boats, seawater, and fishermen. Watching the city from afar, he thinks of a world where there are no gossip and lies, where the hut and the palace look indistinguishable. Sensing the forest, the sea, and the wind, he compares the people of the North and South in his mind and comes to the conclusion that the children of the South have a right to the money earned. He begins to look at people, life, and nature with love and happiness. Feeling the need to be someone who loves people and life and helps them, he concludes that it is possible to love people, albeit not too much, albeit "in the form of a human speck". The narrator, who thinks independently of society and its classical norms, can't find someone to tell about the great love of humanity that has formed in him, and shares his love for the natural, the pure and unspoiled, by wrapping it in pen and paper.

In the story, the narrator, "who is drawn beyond normal pleasures in every beauty" (Abasıyanık, 2018: 62), acts with the value of being independent by going beyond what is considered "normal". He approaches nature, children, people, the poor, and life with great love, "love all people, children, birds, fruit, miserable and hungry people with a vain love, in the form of a small speck of human being, by suddenly getting up in a leap without having time to grieve" (Abasıyanık, 2018). : 70) highlights the values of love, happiness, enjoying life, and being in harmony with nature. Thinking that children have a right to every extra income and thinking that "I would see an injustice on the account of southern children in every extra money and civilization in the north" (Abasıyanık, 2018: 69) makes one think about the value of social justice.

The findings of the themes determined according to the sub-values of the value types included in the classification of Schwartz values in the story Ormanda Uyku (f: 6) are given below:

• Hedonism (2) [Enjoying life (1), Happiness (1)]

• Self-direction (1) [Being independent (1)]

• Universalism (2) [Social justice (1); Being in harmony with nature (1)]

• Benevolence (1) [Love (1)]

Kim Kime

The middle-aged husband and wife, who live in a house that is described as the "house above" in Burgazada and where few people pass by, are people who are not well acquainted with the people of the Island. He doesn't show up much, only in the winter season, the man catches the ferry for shopping. One day, his wife goes to the city and says that her husband is dead and her child is hungry, she asks the port officer, doctor, and porter's clerk for help to remove the body. Although he tirelessly tells about his desperation one by one, they all drive the woman out of his head with various excuses and say that no one will go to that hill without money. The pier clerk states that he cannot leave his place, the clerk states that there is no porter to leave without money, and the doctor sends the woman with automatic and soulless reactions. They immediately forget this negative situation and move on with their lives, and the woman, who is dismissed with interest concerns, finds the solution by throwing the corpse from the top. One summer day, the woman boards the ferry without a ticket, and at the end of the story, it is understood that she committed suicide, although it is not explicitly stated.

In the story, it is pointed out that the values of benevolence, compassion, love, respect, understanding, sensitivity, and empathy disappear as everyone gives excuses to the woman and no one helps them, and they no longer remember a painful event such as the dead being left in the middle. "I will do something for you. I'll do it, but it's not possible without a penny." (Abasıyanık, 2018: 74), "I can't go up there. (…) If you find a donkey, I will go out, otherwise I will not take my step." (Abasıyanık, 2018: 75) emphasizing that there is no free business, material values are highlighted and the importance of being rich is explained.

The findings of the themes determined according to the sub-values of the value types included in the classification of Schwartz values in Kim Kime (f: 8) story are given below:

• Power (1) [Getting rich (1)]

• Universalism (4) [Empathy (1); Sensitivity (1); Respect (1); Being savvy (1)]

• Benevolence (3) [Being helpful (1); Love (1); Compassion (1)]

Park

The narrator presents the reader with views of people from Gülhane Park, where he went early in the morning on an autumn day. Listens to the polyphonic hum of the city; he thinks of children, girls, old people with bad intentions, and mysterious young men who come to this nation's garden for various reasons. He witnesses the conversations between Ali Efendi and Dilber, a woman who knows everyone's name and talks to everyone who passes by. Ali Efendi, who says that he has been slandered and that he will commit suicide rather than go to jail, is indecisive and tries to find Sedat for advice. Sedat, who was imprisoned before, tries to extort money from this man by saying that he will find a way to save himself; However, when Ali Efendi did not agree to that job, he made plans over Dilber and sought ways to extort money and had Dilber accept his plans by telling them. Sedat is someone who is trying to get Dilber, who is pregnant with him, to marry Ali Efendi and settle in their house, and his only goal is to pursue financial gain. When the narrator goes back to the park after a long time, where he thinks people have their troubles, he sees Sedat talking to a soldier. She overhears him talking about how he saved Ali Efendi from prison, and how he had gotten Dilber into his house and helped them get married. Sedat had also entered the house as a servant, but when they started to become a real family, Sedat was removed from their circle.

"As soon as I leave my house in Sultanahmet, I always go to the park, I meet a person who is exhausted every day, every day an exhausted person gets involved in the hum of the city again..." (Abasıyanık, 2018: 86); With the narrator, who loves nature, people, the hum of the city and leaves himself to the crowd of the city, the values of love and being in unity with nature emerge. Through the character of Dilber, who takes Sedat away from her home, who transforms after marriage and becomes a person devoted to her husband and home and constantly chasing money, being loyal, sense of loyalty, and family security values; The importance of a spiritual life value is also presented with Sedat, who is constantly brought to the fore with his materialistic aspect and finally says "I understand that I am not wanted" (Abasıyanık, 2018: 88).

The findings of the themes determined according to the sub-values of the value types included in the classification of Schwartz values in the Park (f: 6) story are given below:

• Universalism (1) [Being in unity with nature (1)]

• Benevolence (3) [Being Loyal (1); love (1); A spiritual life (1)]

• Security (2) [Family security (1); Sense of commitment (1)]

Gaz Sobası

Recep, the owner of the village cafe, is a man who is happy by pursuing innovation and brings many innovations to the village. He brings products that the villagers are not accustomed to, such as flashlights, gas stoves, and numbered locks, and these products become the focus of attention for a while in the cafe where the young and old are together. When he brings the gas stove, the young people dream, and the elders warn them not to get used to laziness. Recep tells the young men what he saw in Bursa, the cinema, the falling snow, and many other things, by the stove during the winter season. When the seasons change and they are left alone with the realities of life such as famine, taxes, and death, the elders complain that the young people do not work well and cannot get over the winter stupor. The reason for this is the gas stove of Recep, but the young people state that the crime rate in the village would increase if there were no innovations brought by him. This discourse leads to worse reactions and the stove is compared to an idol. Believing in the world, not in religion, Recep meditates and realizes that he dreams of heaven during worship and finds this analogy justified.

"Sometimes he buys coffee, sometimes some innovations for himself and sometimes for everyone when he comes to the city" (Abasıyanık, 2018: 89), a man who likes to think and dream, has a childlike spirit, does not stop chasing innovation, and can be excited with every new thing. Recep, who is portrayed as a librarian, carries the values of being curious, enjoying, living an exciting life, happiness, and enjoying life with both his character and the innovations he brought to the village. He brings these innovations so that the people of the village can also benefit, and this prevents them from fighting with each other. The young people reveal that Recep also has the values of sharing and love by saying, "If it wasn't for Recep's this and that, there would be bloodshed in this village" (Abasıyanık, 2018: 94). Recep's clothing is also different from the others, it is said that he invented a "peasant fashion" in his own way, and the value of being independent is emphasized. He is criticized when the gas stove he brought makes young people dream and not work enough. Despite this, he does not speak to both young people and old people, and approaches them with understanding and empathy. "He does not speak out so as not to offend the elders" (Sarnıç, 2018: 90), he respects them and the values of being moderate, valuing parents and the elderly, and respect are transformed into behaviors. Recep's thoughts on religion and his attempt to understand those who compare his stove to an idol overlap with the value of being open-minded.

The findings of the themes determined according to the sub-values of the value types included in the classification of Schwartz values in the Gaz Sobası (f:14) story are given below:

• Hedonism (3) [Pleasure (1); Enjoying life (1); Happiness (1)]

• Stimulation (1) [Having an exciting life (1)]

• Self-direction (2) [Being able to be curious (1); Being independent (1)]

• Universalism (4) [Being open-minded (1); empathy (1); Respect (1); Being savvy (1)]

• Benevolence (1) [Love (1)]

• Tradition (2) [Be moderate (1); Share (1)]

• Conformity (1) [Caring for parents and elders (1)]

Plaj İnsanları

Four people, two men, and two women, are walking on the beach, and they attract attention with their different attitudes and appearances. These two men have opportunities that boatmen, fishermen, coal miners, and many more cannot have. One of the girls is of Armenian origin, but she chose to grow up like a Frenchman and became a "Grekize" when they settled in Istanbul. This girl, who is a French fan, falls in love with young people who speak French and play the accordion, and she chooses her friends from this environment. The other girl is a working Turk who studied abroad; however, he finds the Turks rude and did not adopt his own culture. The common point of this group of four is; They have characteristics that are alienated from their own culture, do not adopt the nation they represent, have a bourgeois attitude, do not adopt the values of their own society, distance themselves from humanity and truth while giving importance to appearance, and despise those who are not like themselves. One day, while picking fruit from a boat on the beach, the Polish accidentally causes a small child to fall into the sea. While they were unresponsive to this situation, a young fisherman and a boatman immediately jumped into the sea and saved the child. The boy who caused the accident gives money to the Greek boatman, and gives money to the young Turkish fisherman, but the fisherman refuses the money. While the Turkish girl in the group tells the Polish boy that he has done his duty, the other girl, Janet, leaves the group and comes to the fisherman who had risked his own life to save the boy and kisses him. From that day on, he starts meeting with people like himself and sometimes with people whom he deems inferior before, and because he has some value conflicts within himself, he gives up discriminating between people.

In the story, a wannabe bourgeois class that has moved away from its own social values is told. The narrator's snobby twisting of his mouth with the pipe he smokes for his "only air" makes us; feels like he despises those who don't speak French, those who don't know how to dance, those who don't play bridge, and those who don't speak French to women" (Abasıyanık, 2018: 100) The values of living life and being kind are put in the center. On the other hand, with the young fisherman who jumps into the sea without thinking to save the life of a child he does not know and does not accept anything material in return, the values of being brave, being sensitive, being helpful, love, being virtuous, a meaningful life and compassion come to the fore. The value of responding to kindness was conveyed with the character of Janet, whose perspective changed after the event. The depiction of young people who have distanced themselves from their own society and even started to despise them draws attention to the importance of keeping the culture alive. "I wonder what a big difference can there be between Kuledibi and the people of a neighborhood in the German city of Dresden or the Polish town of Warsaw? Then I understood. The narrator, who says that the whole point is to create a class and appear different from the native people of a country with his daughter, mare, dance, play, swimming and entertainment" (Abasıyanık, 2018: 102), emphasizes the values of equality and tolerance.

The findings of the themes determined according to the sub-values of the value types included in the classification of Schwartz values in the story of Plaj İnsanları (f:16) are given below:

• Power (3) [Having social power (1); To preserve its appearance in society (1); Adopted by people (1)]

• Stimulation (2) [Be brave (1); Living a changeable life (1)]

• Universalism (4) [Being virtuous (1); Equation (1); Tolerance (1); Sensitivity (1)]

• Benevolence (4) [Being helpful (1); love (1); A meaningful life (1); Compassion (1)]

• Tradition (1) [Keeping culture alive (1)]

• Conformity (1) [Being polite (1)]

• Security (1) [Reciprocation of kindness (1)]

Davut'un Anası

Ali returns to his childhood village as a teacher. From time to time, childhood memories come to his mind, he remembers Saime, who used to be the most popular girl in the village, and the memories affect him in a few seconds in the ordinary course of the day. Now Saime's house is in ruins, and in the house next to it David and his mother live. Ali helps Davut with his lessons, while a loving friendship develops between them. Constantly thinking and daydreaming, Ali experiences some thoughts so real that he feels as if he is in a dream while he is awake. One of these thoughts is about Ruhiye, the young and beautiful mother of Davut. When Davut was four years old, he dreams of a day when he went to the sea with Ruhiye, whom he was married to, perhaps this dream would cause him to love Davut like his son.

In the story, the values of love and friendship stand out with teacher Ali, who has a deep affection for a child with whom he shares a room most of the time, and who begins to dream of seeing him as his own child. In addition, the fact that he teaches David, the son of an orphaned woman, overlaps with the value of benevolence, and the fact that he returns to his village after studying in Istanbul and starts to educate the children there overlaps with the value of loyalty.

The findings of the themes determined according to the sub-values of the value types included in the classification of Schwartz values in the story of Davut'un Anası (f:4) are given below:

• Benevolence (4) [Being helpful (1); Friendship (1); Love (1); Loyalty (1)]

Grenoble'da İtalyan Mahallesi

The narrator watches the city from the River Izer and observes the people, trying to get to know them. He witnesses the conversations between the unemployed and the fishermen and he hears these fishermen, who have seen war and even been wounded in the war, advising them to work, to work no matter what, by not giving the unemployed the money they ask for. The Italian Quarter, which the narrator watches from İzer, appears different to the narrator's eyes during the day and at night. In this neighborhood where unemployed young people with scarves walk during the day, at night there is the impression that mysterious men with knives are hiding somewhere. Although he feels as if the relatives of the girls he meets will take revenge on him at night, he goes to the neighborhood and listens to the loving and embracing songs sung there.

In the story, the old fisherman said, "You were not in Verdön, I was there. I was hungry too. This leg of mine got wooden there. Die, but get a job!" (Abasıyanık, 2018: 113) to be responsible, to be competent; the values of love, courage, having an exciting life and happiness come to the fore as the narrator does not give up on loving and approaching people despite his fear, and comes together with people and listens to their voices despite experiencing internal conflict.

The findings of the themes determined according to the sub-values of the value types included in the classification of Schwartz values in Grenoble'da İtalyan Mahallesi (f:6) story are given below:

• Success (1) [Become Competent (1)]

• Hedonism (1) [Happiness (1)]

• Stimulation (2) [Be brave (1); Having an exciting life (1)]

• Benevolence (2) [Being Responsible (1); Love (1)]

Marsilya Limanı

The narrator, who presents the depiction of the sailor spirit created by the Port of Marseille, says that there are people from all kinds of ethnic backgrounds in this exotic city and that they have changed their temperament and behavior by adapting to the spirit of the place over time. Talking about the drama of an Algerian sailor, he mentions that he committed murder for twenty thousand francs in order to go to Paris after being tempted by this place and consuming all his money. He thinks that this young man who took the train and left as if nothing had happened, will come back when his money runs out. It suggests that the values of the foreigners coming to the place and the people they meet change and the relations of interest come to the fore.

"The soul is no longer the soul of a city dweller, a peasant, a politician, or a murderer. This spirit is the sailor spirit." (Abasıyanık, 2018: 117) mentioning that the sea, the wind, and the moon make even a Marseille girl, who has never heard of romance, feel this; being in harmony with nature; "The white, pointy-nosed men made him murder for 20,000 francs." (Abasıyanık, 2018: 119), by emphasizing that the Algerian youth's understanding of the value in a foreign country has changed, pointing out the importance of keeping the culture alive, having self-respect, choosing his own goals, and being able to control himself. From the statements "The police on the street will catch Algerians, Armenians, Greeks and Greeks, Algerians and Armenianized French people in dirty coffee shops and load them into a truck" (Abasıyanık, 2018: 120), it is concluded that different cultures live together, and this shows the value of tolerance. At the same time, gathering those who may pose a danger to the society reveals the existence of the values of national security and wanting the continuation of the social order.

The findings of the themes determined according to the sub-values of the value types included in the classification of Schwartz values in the story of Marsilya Limanı (f:8) are given below:

• Self-Direction (2) [To be able to choose one's own goals (1); Having self-respect (1)]

• Universalism (2) [To be in harmony with nature (1); Tolerance (1)]

• Tradition (1) [Keeping culture alive (1)]

• Compliance (1) [Be able to control oneself (1)]

• Security (2) [National security (1); Social order wanting it to last (1)]

The findings of the sum of the sub-values of the value types included in the Schwartz value classification in the story book "Sarnıç" (f:133) are given below:

• Power (12) [Having social power (4); To be rich (3); To protect their appearance in society (2); Being adopted by people (3)],

• Success (2) [To be competent (1); Be ambitious (1)]

• Hedonism (11) [Pleasure (1); Enjoying life (6); Happiness (4)]

• Stimulation (8) [Be brave (3); Living a changeable life (3); Having an exciting life (2)]

• Self-direction (8) [Being able to be curious (2); Being independent (3); Being able to choose their own goals (2); Having self-respect (1)]

• Universalism (35) [Being open-minded (1); Being virtuous (2); Social justice (5); Equation (4); Desire for a world in peace (2); A world full of beauty (1); Being in harmony with nature (4); Internal harmony (1); Empathy (3); Tolerance (4); Sensitivity (3); Respect (3); To savvy (2)]

• Benevolence (30) [Being helpful (5); Being honest (1); Being loyal (2); Being responsible (2); Friendship (2); Love (11); A spiritual life (1); A meaningful life (2); Compassion (3); Loyalty (1)]

• Tradition (8) [Being humble (1); Be moderate (1); To share (4); Keeping the culture alive (2)]

• Comformity (6) [Being polite (1); Valuing parents and the elderly (2); Being able to control oneself (3)]

• Security (8) [National Security (2); To want the social order to continue (2); Family security (3); Reciprocate the favor (1); Sense of commitment (3); Being healthy (2)]

In the "Sarnıç" storybook, the sub-values of the value types included in the Schwartz value classification were found in all 16 stories (f:133).

DISCUSSION

While values guide our lives, value education approaches show the paths we will follow in the education process. Values are basic standards (Rokeach, 1973) and judgments about what is right and what is wrong (Veugelers & Vedder, 2003), which are accepted as appropriate by members of society, represent common beliefs and thoughts, and aim to protect the integrity of society. In this context, values appear as judgments that help individuals decide what is desirable or valuable in their lives. In this respect, values guide our behavior and give meaning to our existence. We organize our desires and goals around our values. We are known for the values we have as individuals (Lokanadha Reddy, Thankachan & Shailaja, 2013). Values, which form the basis for the cognitive, social, emotional and psychological development of individuals, are considered abstract concepts and function as standards of behavior (Kaur & Nagpal, 2013).

Although there are some debates about whether values should be taught or acquired, it is clear that values are a part of education. The existence and discussion of different approaches to values education is a fact that supports this situation (Yarar Kaptan, 2019). Although there are many different reasons from different disciplines that make values education mandatory, some common reasons are also seen. Some of these reasons are to keep society alive against possible social degradation and decay. Another group is oriented towards maintaining the existing situation, protecting the status quo and socializing it.

Acquisition of values in schools depends on communication between students, education and training programs, etc. It continues continuously through various activities such as in this respect, education has an important role in conveying human values and the basic values of society to students (Kaur and Nagpal, 2013). Since values education concerns the whole society, it is important to consider it in a multidimensional way. In this context, there is a need for all elements that make up the education system to gain sensitivity and awareness on this issue. In addition to being implementers of the curriculum, teachers also have important, leading roles and duties in imparting values to students (MEB, 2019). Teachers frequently benefit from literary texts while performing these duties.

When any literary work is carefully examined, it is understood that it contains many important and serious messages about life. In the context of values education, it is seen that transferring values with books and literary texts is important in transferring values to individuals. For this reason, when the values contained in the stories discussed in the research are examined, it is observed that very important information has been reached in the context of values education.

The sub-values of the value types included in the Schwartz value classification in the story book "Sarnıç" (f:133); Power (12), Achievement (2), Hedonism (11), Stimulation (8), Self-direction (8), Universalism (35), Benevolence (30), Tradition (8), Conformity (6) and Security (8).

Sait Faik (1906-1954) is a turning point in Turkish storytelling. Seen, lived, thought; short pieces of life that cannot be analyzed and explained become the subject of stories with him. In an environment that does not understand him, does not respect his work and considers him a loafer who lives off his parents' money, he endures all these negativities and troubles and continues to write, which he considers his work, and internalizes it. He approaches with great love, respect and admiration those who are truly "human", including those who look at him negatively.

Sometimes the visible and the reality behind it are different. As a matter of fact, when Sait Faik's book "Sarnıç", which draws a different profile at first glance, is examined in the context of values education, the fact that there are many values in it makes one think of getting to know its people and society well. With this study, it is aimed to be instrumental in other studies on the subject.

CONCLUSION AND RECOMMENDATIONS

When we look at societies from past to present, it can be said that individuals try to provide their children with values that they consider important for themselves and their society. Within the education system, schools are considered important institutions where values education takes place. Efforts to impart values, both directly and indirectly, show that values education always exists. Because in order to ensure the continuity of societies and therefore schools, which constitute a small structure of society, and to form a democratic society, some basic principles and understandings must exist and be transferred to the next generation. Especially in education systems, teaching values effectively and healthily affects societies and the future significantly. For this reason, values have always been seen as important and necessary, and the question of what to do and how to acquire

them has always been on the agenda. In this regard, different value education approaches have been developed by being influenced by the historical time.

Educational institutions have an important share in transferring values. During the education process, texts selected in accordance with the developmental characteristics, interests and expectations of the target audience are among the materials that should be used in value education. Especially literary texts play an important role in conveying values through the images and polysemy they contain. Story, one of the literary genres, is one of the resources that can be used in values education by selecting examples appropriate to the level. In this study, the stories of Sait Faik, who is the first name that comes to mind when it comes to situation stories in Turkish literature, in his book titled "Sarnıç", were examined in the context of values education.

As a result of examining the values included and emphasized in the Sait Faik Abasıyanık stories examined within the scope of the research, in the context of values education, the following are the suggestions:

•Relevant field experts and researchers for scientific studies should investigate the function of children's and youth literature products, especially the books in which children and young people meet frequently and are willing to read by looking at each other, in the context of acquiring values education; should share practical recommendations based on research results.

•Curriculum programs play a major role in encouraging individuals to live and be sensitive to the environment, and to question and evaluate what is happening around them in the context of values education. It is thought that recommending books with these features to individuals will benefit society.

•Values generally determine the purpose and direction of the individual, determine the foundations and general direction of individual and social actions, right and wrong; They have functions such as helping to determine what is right and wrong, what is pleasant and what is unpleasant, what is moral and what is not. Our decisions are formed as a result of these functions. It can be said that the materials and literary texts used by the teacher, which are the strongest aspect of the educational atmosphere in value transfer, are found to be very important.

•Most of the values correspond to abstract concepts. Therefore, metaphor should also be considered as a means of concretization in value transfer, especially for primary school children. However, it should not be forgotten that metaphors have an important effect not only in childhood but also in adults, and literary texts should be used at this point.

•When you look at any literary work carefully; It will be understood that its sole purpose is not to exhibit a narrative in line with literary approaches and to perform art in this sense, but that it contains various important and serious messages about life. In this way, it is seen that transferring values through books and literary texts is important in transferring values to individuals in the context of values education.

In summary; It should be known that value education is an important component of formal education, the risks and advantages of technology should be taken into consideration in value transfer, literary texts should be used in value transfer, culture should be taken into account in value transfer, the defended values should be lived and the values should be presented through strong metaphors, and education models should be developed accordingly.

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The Effect of Online and Face-To-Face Teaching Method on Course Outcomes and Attitudes in Secondary School 1st Grade Visual Arts Course

Ortaokul 1. Sınıf Görsel Sanatlar Dersinde Çevrim İçi ve Yüz Yüze Öğretim Yönteminin Ders Kazanım ve Tutumlara Etkisi

Sema Kara[1]

Abstract

Purpose: In this study, the effects of effective combination of online technologies and face-to-face teaching practices on students' attitudes and course outcomes in secondary school visual arts courses were investigated.

Design/Methodology/Approach: This research is an experimental study based on the Pre-Test - Post-Test Trial and Control Group (Split-Plot-t Design) 2x2 factorial (two groups and two measurements) and repeated measures design. In the study, "experimental procedures" were applied to the experimental group with sessions lasting two hours a week for 6 weeks.

Findings: This research is an experimental study based on the Pre-Test - Post-Test Trial and Control Group (Split-Plot-t Design) 2x2 factorial (two groups and two measurements) and repeated measures design. In the study, "experimental procedures" were applied to the experimental group with sessions lasting two hours a week for 6 weeks. The research groups were divided into two separate groups. The experimental group was applied on Tuesday and the control group was applied on Wednesday.

Highlights: The mean scores of the subjects who participated in the 6-week online learning and face-to-face teaching sessions in the post-test of visual arts acquisitions were higher than the mean scores of the pre-test. The Wilcoxon Z test was used to determine whether the difference between the mean scores of the experimental group in the pre-test and post-test of visual arts acquisitions was significant or not, and it was found that the difference was significant at $p < .01$ level.

Öz

Çalışmanın amacı: Bu çalışmada ortaokul Görsel Sanatlar Derslerinde çevrimiçi teknolojilerle yüz yüze öğretim uygulamalarının etkili bir şekilde bir arada uygulanmasının öğrencilerin tutum ve ders kazanımlarına etkisi araştırılmıştır.

Materyal ve Yöntem: Bu araştırma Ön Test - Son Test Deneme ve Kontrol Grup (Split-Plot-t Design) 2x2 faktörlü (iki grup ve iki ölçüm) ve tekrar ölçümlü desene dayalı deneysel bir çalışmadır. Araştırmada deney grubuna 6 hafta süre ile haftada iki saat süren oturumlarla "deneysel işlemler" uygulanmıştır.

Bulgular: Bu araştırma Ön Test - Son Test Deneme ve Kontrol Grup (Split-Plot-t Design) 2x2 faktörlü (iki grup ve iki ölçüm) ve tekrar ölçümlü desene dayalı deneysel bir çalışmadır. Araştırmada deney grubuna 6 hafta süre ile haftada iki saat süren oturumlarla "deneysel işlemler" uygulanmıştır. Araştırma grupları iki ayrı gruba ayrılmıştır. Deney grubuyla salı, kontrol grubuyla çarşamba günü uygulama yapılmıştır.

Önemli Vurgular: 6 haftalık çevrim içi öğrenme ve yüz yüze öğretim oturumlarına katılan deneklerin görsel sanatlar kazanımları son-test uygulamasından aldıkları puanların ortalaması, ön-test uygulamasından aldıkları puan ortalamasından yüksektir. Deney grubunun görsel sanatlar kazanımları ön-test ve son-test uygulamasından aldıkları puanların ortalamaları arasındaki farkın anlamlı olduğu anlaşılmıştır.

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INTRODUCTION

The quarantine and restriction decisions taken by governments during the pandemic have to a large extent directly affected education systems at all levels. Maintaining a routine in education at the traditional level provides academic discipline, stability and a sense of security for the psychological state of teachers and students. Arrangements such as school closures, social distancing and/or confinement, unusual situations arising in teaching practices have created a real multifaceted crisis situation for teachers and students. Nationwide school closures and uncertainties for the entire school sector have also led to the emergence of new challenges in this process (Lu et al., 2020; Naser et al., 2020; Newby et al., 2020).

Especially in Turkey, the application of technology to the field of education affects not only the main disciplines such as maths, science, Turkish and English, but also art education in secondary schools. Art teachers can use online platforms to zoom in on great work and follow detailed instructions. They can also exchange ideas through online platforms that encourage students' active skills, thinking and participation. This platform can promote interactive learning experience by creating collaboration and communication among these groups of students (Alan & Sünbül, 2010; Baş et al., 2016; Hiltz, 1995; Qihan, 2020).

With the introduction of Internet and network technologies in education, it has become inevitable that the role of trainers will change. Trainers have the opportunity to learn what other colleagues are doing and what is going on in their fields in a short period of time through the internet. The internet, which was used only for communication (e-mail) in the previous years, is used for more purposes today. This is due both to the widespread use of the Internet and to the multiplicity and ease of use of the services offered on the Internet. While in previous years educators used the Internet only for text-based programmes such as e-mail, telnet, etc., it is seen that today they use this technology as a part of the educational environment, preparation of course materials, scanning and obtaining related literature, etc. for educational purposes (Yıldız et al., 2004). In education and training, computer can be used interactively more safely, quickly and easily than classical education and training methods. In environments where education and training materials are not available, multimedia programmes can be used for written, visual, audio and interactive education and training. This method of education and training will reduce the cost of education, as well as the damage that inexperienced students may cause to the materials will be eliminated. Since the interactive education and training method is used, the question or problem that the student may encounter can directly reach the trainer, the solution will be so easy and quick, which will increase the efficiency of this education (Akinbadewa & Sofowora, 2020; Şisman & Kucuk, 2019).

In recent years, emerging technologies such as tablets, smartphones, laptops and other electronic smart devices have started a new trend in the field of education and enriched teaching and learning (Huda et al., 2018). On this basis, online learning has gradually entered educational practice and research. The online learning environment is characterised by the Internet and other technologies such as telephone, videocassette, satellite transmission or computer (Zuhairi et al., 2018). It is an open and distributed learning environment that is supported by (e.g. the use of) and utilises these techniques to mediate a necessary communication (Jonassen, 2004). This type of learning can take both synchronous and asynchronous formats. The former requires learning to take place at a fixed time, similar to traditional offline learning in a fixed location; the latter is relatively flexible in timing, allowing for self-paced learning and the exchange of resources over a communication network (Khan, 1998). Regardless of the format, online learning has advantages over face-to-face learning, such as balancing educational resources and development, reducing costs and promoting equity in education (Johnson & Aragon, 2003).

Bates (1997) believes that the main reason for the widespread implementation of online learning is not only to improve education and training opportunities and learning quality, but also to reduce costs and increase effectiveness. Compared to traditional offline learning, online learning is fraught with many factors that influence online learning engagement, which requires students to be more disciplined (Montgomerie et al., 2016). Online learning can change teachers' assumptions and beliefs as well as their face-to-face teaching practices (Huppert, 2009). Another important effect is that online education programmes can change teachers' understanding of teaching. In other words, even a short online training course can influence teachers' understanding of various situations, especially for new teachers who may lack teaching experience and skills (Vilppu et al., 2019). This not only places more responsibility on online learners, but also creates more opportunities and possibilities for teaching practice and innovation.

Individual characteristics of students are the key concept in designing instruction (Koyuncuoğlu, 2021; Sünbül, 2010; Yıldız et al., 2004). Individual differences, students' interests, attitudes and psychomotor skills are important in visual arts education. In this context, while designing the online learning system, the process should be carried out by considering the individual differences of the students. The aim of online visual arts education is to design the learning environment or learning content according to the individual needs of the students and the requirements of the course. When online learning is analysed in terms of design and realisation features, it is in the common field of educational technology, computer sciences, internet and network systems and artificial intelligence disciplines (Adu & Duku, 2021; Alzboun et al., 2023; Susanto et al., 2020; Zillmer & Mussmann, 2023).

In addition, when analysed in terms of art education, it is seen that today's e-learning systems are insufficient in terms of their ability to provide education according to the individual differences of individuals, personal learning and the objectives of the visual arts course (Doğru, 2020; Kaleli, 2020; Kaleli, 2021; Kara, 2021). Existing e-learning systems impose great responsibility on the student for the realisation of the learning activity. Both the difficulty of teaching the visual arts course on computer platforms and the fact that individuals have different learning styles, different learning abilities, different cognitive levels related to the subject they are trying to learn, and different individual learning goals, the teaching offered through e-learning systems can often result

in failure. In addition, in areas where there is not enough preparation and electronic resources, e-learning students may fail to realise their own learning by using e-learning systems (Martinez, 2002).

In general, art education is a discipline for developing visual ability and innovation skills in primary and secondary schools. Online learning for art education is also important as it mediates the transfer of specific contents through all kinds of information devices (Wang et al., 2021). Online learning has become an important way for teachers to improve themselves so that students can learn flexibly and independently. During the COVID-19 pandemic, this form of online learning has become more prevalent in Turkey. It can promote the integration of technology into the art discipline by helping art students and teachers go beyond the boundaries of traditional art guidelines (Kara, 2021; Kaleli, 2021). However, due to the hands-on necessity of art education, how art education can be educated in an online learning environment requires further research. This study fills this gap by assessing the relationships between the online learning environment and art students' basic psychological needs, their cognitive engagement, and their behaviour after their participation in an online education programme. This study can also help students to better understand the factors that influence their online learning performance in order to improve their own learning outcomes.

Developing and implementing successful teaching requires an understanding of how technology is related to pedagogy and content (Koehler et al., 2007; Koyuncuoğlu, 2021). Although the factors that are effective in the process of integrating educational technologies are multidimensional, the planning and implementation of teaching methods related to the use of technology, especially in visual arts education, is an important source of problems (Kara, 2021). In this context, it is thought that the effective implementation of face-to-face teaching practices with online technologies will be effective in the visual arts course achievements and attitudes of secondary school students.

Objective: In this study, the effects of effective combination of online technologies and face-to-face teaching practices on students' attitudes and course outcomes in secondary school visual arts courses were investigated. For this purpose, answers to the following questions were sought:

Hypothesis 1: There is a significant difference between the course outcomes of the experimental group in which online + face-to-face teaching practices were carried out and the control group in which traditional teaching practices were carried out in the Secondary School Visual Arts Course.

Hypothesis 2: There is a significant difference between the attitudes of the students in the experimental group in which online + face-to-face teaching applications were carried out and the students in the control group in which traditional teaching applications were carried out in the Secondary School Visual ArtsCourse.

METHOD/MATERIALS

This research is an experimental study based on the Pre-Test - Post-Test Trial and Control Group (Split-Plot-t Design) 2x2 factorial (two groups and two measurements) and repeated measures design (Payton et al., 2006). In the study, "experimental procedures" were applied to the experimental group with sessions lasting two hours a week for 6 weeks. The research groups were divided into two separate groups. The experimental group was applied on Tuesday and the control group was applied on Wednesday. Experimental procedures were carried out with the online learning + face-to-face teaching programme that increases the visual arts attainment and attitudes of the students in the 1st grade visual arts course of secondary school. In this process, visual arts activities were carried out with traditional teaching in the control group. At the beginning of the research, visual arts acquisition and attitude scales were applied to the experimental and control groups simultaneously as a pretest.

In order to achieve the aims and behaviours specified in the experimental process programme, a curriculum consisting of 6 sessions was prepared. While the experimental group was given online learning + face-to-face teaching training in the form of 6 sessions of 2 class hours per week, routine course activities were carried out with the control group. In this context, they worked on realising different perspectives of an artist in the example of German painter Albert Dürer, and for this purpose, they also examined the period in which he lived in the process of understanding the artist. Students visually narrated Dürer's life in a chronological flow by using online internet resources and materials as well as the internet and library. During the storytelling, they carried out face-to-face activities. etc. In the art lesson, they explained the chronological calendar about Dürer's life through painting by using the storytelling work. They formed online groups and analysed Dürer's "Melancolia", interpreted the painting, and then marked the mathematical elements in the painting.

Figure 1. Melancolia, Albert Dürer (Wikipedia, 2021)

The students also analysed and discussed different pictures from the period. Another point on the worksheet was the magic square on the back right of the picture. They tried to find the year Dürer painted the picture in the magic square. They realised what the magic square was and how it was created. They discovered how Dürer created the magic square in his painting.

Figure 2. Magic Squares, Albert Dürer (Alkauskas, 2018)

Then, the students painted similar works of Dürer with face-to-face individual activities. Mean while, in the control group, the teacher explained Dürer's life and works through presentation, showed his works and the students tried to make these paintings. At the end of the research, visual arts acquisition and attitude scales and post-test were applied to the experimental and control groups.

EXPERIMENT CONTROL GROUPS

The research was conducted on students in the first grade of a private secondary school in Mersin province in the autumn term of the 2021-2022 academic year. According to the research design, 36 students were divided into two groups of 18 students each, and one of these groups was determined as the experimental group and the second as the control group. In the analysis of the data obtained, it was developed in accordance with the two-part design (McLeod, 2017). The list of research groups is given in Table 1. In the selection of the research and study population, the judgemental method was preferred for "general reasons" and as required by the research.

The distribution of the students included in the groups according to gender, field of study and groups is given in the table below.

Table 1. Distribution of the Students Included in the Research Groups

	Girl	Male	Total
Experimental Group	9	9	18
Control Group	10	8	18
TOTAL	19	17	36

DATA COLLECTİON TOOLS

Attitude Scale Towards Visual Arts Course

In this study, the attitude sub-dimension of the 'Visual Arts Affective Characteristics Scale' developed by Arslantaş (2021) was used to measure the attitudes of secondary school students towards the visual arts course. The scale consists of 13 items in Likert form with a 5-grade structure. Linear and exploratory factor analyses revealed that the attitude scale towards visual arts course has a unidimensional structure. Cronbach Alpha internal consistency analyses performed on different samples ranged between .87 and .91. According to the analyses performed on secondary school students, the Cranbah Alpha reliability coefficient of the visual arts attitude scale was found to be .89.

Secondary School 1st Grade Visual Arts Lesson Attainment Scale

Secondary School 5th Grade Visual Arts Course Outcome Scale was developed to measure students' course outcomes. While developing the 5th Grade Visual Arts Lesson Attainment Scale, the unitised annual plans of the lesson were examined and the opinions of the lesson teachers and measurement and evaluation experts were consulted. A 5-point rating system was used in the scoring of the scale. If the student fully realised the relevant outcome, 5 points were given, and 1 point was given if the student realised it very little. In the validity process of the 5th Grade Visual Arts Lesson Acquisition Scale, item analyses were made and then Cronbach's reliability coefficient was calculated. Item-test correlations, reliability and validity analyses were performed on the results obtained from the trial application of the 5th grade Visual Arts Lesson Attainment Scale. According to the analyses, it is seen that all items in the Attainment Scale have an item-test correlation above .35. This shows that all items of the scale are consistent with all objectives of the 5th Grade Visual Arts Course in Secondary School. The coefficient of the scale calculated by Cronbach Alpha reliability technique is .93.

Data Analysis Techniques

The effects of the methods applied in the context of the data obtained at the end of the experimental procedures on the visual arts course achievements and attitudes of the students were examined. The quantitative data obtained were entered into the SPSS package programme and analysed. Since the data did not meet the assumptions of normal distribution (Yurt & Sünbül, 2012), Mann Whitney U and Wilcoxon tests, which are non- parametric tests, were used between the pre-test and post-test scores of the experimental and control groups.

FINDINGS

In this section, the findings obtained as a result of the statistical analysis of the data collected to test the hypotheses put forward in the research are explained, shown in tables and interpreted.

"The visual arts achievements of the group receiving online learning and face-to-face teaching increase at a significant level". The arithmetic averages, standard deviations and t- values of the pre-test and post-test acquisition scores of the experimental group for this hypothesis are given in Table 2.

Table 2. Numerical Information and Wilcoxon Z Value of the Visual Arts Outcomes Pre-test and Post-test Scores of the Experimental Group Applied Online Learning and face-to-face Instruction

Experimental Group	N	Mean Rank	Sum of Ranks	Wilcoxon Z	p
Negative Ranks	3	5,14	26,00	3,25	,000
Positive Ranks	13	9,50	171,00		

**p< .01

As seen in Table 2, the mean scores of the subjects who participated in the 6-week online learning and face-to-face teaching sessions in the post-test of visual arts acquisitions were higher than the mean scores of the pre-test. The Wilcoxon Z test was used to determine whether the difference between the mean scores of the experimental group in the pre-test and post-test of visual arts acquisitions was significant or not, and it was found that the difference was significant at p< .01 level.

The numerical information of the t-test results of the online learning and face-to-face teaching group is given in Table 3 to understand whether there is a difference between the visual arts acquisition levels of the online learning and face-to-face teaching group compared to the control group.

Table 3. Numerical Information and Mann Whitney U/Z Value of Visual Arts Outcomes Post-test Scores of Experimental and Control Groups

Group	N	Mean Rank	Sum of Ranks	Mann Whitney U/Z	P
Experiment	18	25,25	454,50	-3,852	,000
Control	18	11,75	211,50		

**p< .01

As seen in Table 2, the Mann Whitney U test was used to determine whether the difference between the mean scores of the experimental group, which participated in 6- week online learning and face-to-face teaching practices, and the control group, which received traditional instruction, in the visual arts acquisition post-test was significant or not, and it was found that the difference was significant at p< .05 level. These findings support the hypothesis that online learning and face-to-face teaching practices increase the level of visual arts acquisition at a significant level.

"Online learning and face-to-face teaching significantly increase the attitudes of the group towards the visual arts course". The arithmetic averages, standard deviations and t- values of the pre-test and post-test attitude scores of the experimental group towards the visual arts course for this hypothesis are given in Table 4.

Table 4. Numerical Data and Wilcoxon Z Value of the Pre-test and Post-test Attitude Scores of the Experimental Group Applied Online Learning and Face-to-Face Instruction towards Visual Arts Course

	N	Mean Rank	Sum of Ranks	Wilcoxon Z	p
Negative Ranks	1	3,20	9,10	-3,625	,000
Positive Ranks	17	9,00	153,00		

**p< .01

As seen in Table 4, the mean scores of the subjects who participated in the 6-week online learning and face-to-face teaching sessions in the post-test of attitudes towards visual arts course were higher than the mean scores in the pre-test. The Wilcoxon Z test was used to determine whether the difference between the mean scores of the pre-test and post-test of the experimental group's attitudes towards the visual arts course was significant or not and it was found that the difference was significant at p< .05 level.

The numerical information of the t-test results of the online learning and face-to-face teaching group is given in Table 5 to understand whether there is a difference between their attitudes towards visual arts course compared to the control group.

Table 5. Numerical Data and t-Values of the Post-test Attitude Scores of the Experimental and Control Groups for Visual Arts Outcomes

Group	N	Mean Rank	Sum of Ranks	Mann Whitney U/Z	P
Experiment	18	25,25	454,50	-3,853	,000
Control	18	11,75	211,50		

**p< .01

As seen in Table 5, the Mann Whitney U test was used to determine whether the difference between the mean scores of the experimental group, which participated in 6- week online learning and face-to-face teaching practices, and the control group, which received traditional teaching, in the post-test of the attitude scale towards visual arts course was significant or not, and it was found that the difference was significant at p< .05 level. These findings support the hypothesis that online learning and face-to-face teaching practices significantly increase attitudes towards visual arts.

CONCLUSION-DISCUSSION

As a result of the experimental procedures, the 5th grade students in the experimental group who worked in the interaction learning environment organised according to online + face-to-face learning were more successful in the visual arts course than the students working in the control group (learning environment providing interaction design organised according to traditional teaching) and achieved a high level of achievement. While the students in the experimental group gained the target behaviours of the visual arts course with online interaction tools in the learning process, they also developed their multidimensional skills with face-to-face interactions. It can be concluded that the factor that distinguishes the activities in the control group from those in the experimental group is that the use of these two features (remote + face-to-face) together contributes to students' learning. Therefore, it can be said that the use of contemporary technological applications and different teaching approaches together makes students more successful in achieving the objectives of the course. As a result, it can be concluded that in secondary school visual arts courses, students' both synchronous and asynchronous interaction in the learning process and working individually in this process positively affect students' visual academic achievement in the process. It can be said that this result is in line with the results of the studies (Altowairiki, 2021; Demosthenous et al., 2020; Hu & Huang, 2021; Kaleli, 2021; Kibici & Sarıkaya, 2021; Martin et al., 2020; Moore-Adams et al., 2016; Thompson & McDowell, 2019; Xhelili et al., 2021) that point out the importance of using both synchronous and asynchronous interaction in online interaction. According to Kizilcec et al. (2017), supporting face-to-face teaching with online learning increases students' self-regulation skills and individual competencies. In visual arts courses, it is expected that students will be more active in their lessons and exhibit high performances if their individual characteristics are taken into account in the learning-teaching processes and all activities are supported by technology. Researchers have reported increased interpersonal interactions (Cung et al., 2018), learner-learner interactions (Phirangee, 2016; Shackelford & Maxwell, 2012; Tawfik et al., 2018), peer-peer interactions (Comer et al., 2014) in online learning environments and face-to-face teaching practices. examined . student-instructor interaction (Kuo et al., 2014), learner-content interaction (Zimmerman, 2012), interaction through peer counselling (Ruane & Koku, 2014) have stated that such elements provide high gains regardless of the quality of the courses.

While the activities carried out in the face-to-face learning environment provided students with a strong teacher guidance, the online processes repeated, deepened and made meaningful the objectives and behaviours of the visual arts course with an interactive approach. In one aspect, the online learning application provided the student's independence and specialisation of learning in a free environment, while face-to-face teaching activated the social interaction process as a group activity. In this context, with these two methods, online and group learning activities came together in a multifaceted and rich environment. Many existing studies have pointed out the importance of teacher- guided online teaching activities during daily practice (Altowairiki, 2021; Kaleli, 2020; Kaleli, 2021; Pushpanadham et al., 2023). In this respect, the individual practice and repetition activities carried out both in online teaching practices and in the use of the current curriculum led to a significant increase in the visual arts skills of the students in the experimental group compared to the control group.

Another finding of this study is that the students in the experimental group who worked in the interaction learning environment organised according to online + face-to- face learning had higher attitudes towards the visual arts course than the students in the control group who worked in the learning environment providing interaction design organised according to traditional teaching. These findings are consistent with those of Anderson & Bourke (2013), Cole et al. (2014); Dziuban et al. (2015); Kim et al. (2014), Kuo et al. (2013); Lee (2014), Martin et al. (2020) is similar to the findings of the research conducted by. According to the combination of online learning and face-to-face teaching provides different affective environments in which learners express their emotions. If online learning is well planned and effectively coordinated with face-to-face teaching student satisfaction, participation and attitudes are positively affected (Cole et al., 2014; Dziuban et al., 2015).

It is seen that the use of online technologies in educational environments contributes to increasing student motivation and developing positive attitudes towards the course (Aşkar & Olkun, 2005; Kibici, 2018; Lim & Ching, 2004; Vijayavalsalan, 2018). Online technological development also changes the structure of all processes related to education and brings a different perspective to practices and approaches (Tor & Erden, 2004). Different approaches, applications, situations of being faced with active stimuli, rich content, content suitable for children's readiness, and the use of remarkable tactics and techniques in the visual arts course positively affected students' attitudes. According to Godwin-Jones (2013), the integration of online learning with courses provides experiential learning, better understanding, strong interaction between students and teachers, motivation for learning and self-study environments. In general, the combination of online learning and face-to- face teaching made the classroom and visual arts course more attractive and interesting, and increased students' active participation and attitudes towards the course. As a result, it is thought that the research has a special importance in terms of providing a road map in reaching the skills and competences required for visual arts education. One of the possible ways for art educators to successfully create this kind of learning is to apply art and art skills purposefully to the field of technology and technology knowledge and skills purposefully to art environments. In the literature, studies on the utilisation of online activities in Visual Arts courses are limited. In order to contribute to the literature, more studies can be conducted in Visual Arts courses at different school levels. In addition, qualitative studies can be conducted on Visual Arts teachers' online learning skills and self- efficacy.

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"From Blossoming to Blooming": A Proposal for a Collective Learning and Development Model for Individuals Working with Infants and Toddlers

Tomurcuklanmadan Çiçeklenmeye: Küçük Çocuklara Yönelik Çalışanlar İçin Kolektif Öğrenme ve Gelişmeye Dair Bir Model Önerisi

Pınar AYYILDIZ[1]

Abstract

Purpose: This study intends to propose a novel model for Türkiye for individuals working with infants/toddlers, a country in which nearly two million of students continuing pre-primary education exist and where there are more than half a million refugee children from 0-5 years of age, who are of Syrian origin merely.

Design/Methodology/Approach: In fact, Türkiye, as a developing country, owns a highly dynamic and challenging territory for policy makers, educators, decision making bodies, agencies, and non-governmental organizations (NGOs), which urges the said parties to act together for the 'best interests of the child'. This research then attempts to offer a model for student teachers and NGOs to work collaboratively particularly in times of crises.

Findings: These student teachers involve high school students studying child development and university students e.g., of Preschool Education programs. The model seeks to empower student teachers to support each other through a mentoring program addressing: i.the practicum of culturally sensitive teaching, ii.inclusive and socially just praxis, iii.emotionally demanding work.

Highlights: NGOs will help the mentoring program to reach out marginalized communities, namely, infants and toddlers a)in adult prisons, b)'on the streets', c)in seasonal farm workers' camps, d)in hospitals, e)in special education and rehabilitation centers. It is believed the proposed model can shed light to prospective initiatives to emerge and also strengthen the critical transition from initial professional studies to early childhood professions.

Öz

Çalışmanın amacı: Bu çalışma, okul öncesi eğitime devam eden yaklaşık iki milyon öğrencinin bulunduğu ve sadece Suriye kökenli 0-5 yaş arası yarım milyondan fazla mülteci çocuğun yaşadığı Türkiye'de bebeklerle/çocuklarla çalışan bireyler için yeni bir model önermeyi amaçlamaktadır.

Materyal ve Yöntem: Aslında, gelişmekte olan bir ülke olarak Türkiye, politika yapıcılar, eğitimciler, karar organları, kurumlar ve sivil toplum kuruluşları (STK'lar) için oldukça dinamik ve zorlu bir alana sahiptir ve bu da söz konusu tarafları 'çocuğun yüksek yararı' için birlikte hareket etmeye teşvik etmektedir. Bu araştırma, öğretmen adayları ve STK'ların özellikle kriz dönemlerinde işbirliği içinde çalışabilmeleri için bir model sunmaya çalışmaktadır.

Bulgular: Bu bulgular öğrenci ve öğretmenler, çocuk gelişimi okuyan lise öğrencilerini ve Okul Öncesi Eğitim programları gibi üniversite öğrencilerini kapsamaktadır. Model, i.kültüre duyarlı öğretim pratiği, ii.kapsayıcı ve sosyal açıdan adil uygulama, iii.duygusal açıdan zorlu çalışma konularını ele alan bir mentorluk programı aracılığıyla öğretmen adaylarını birbirlerini desteklemeleri için güçlendirmeyi amaçlamaktadır.

Önemli Vurgular: STK'lar, mentorluk programının marjinalleştirilmiş topluluklara, yani a)yetişkin hapishanelerindeki, b)'sokaklardaki', c)mevsimlik tarım işçilerinin kamplarındaki, d)hastanelerdeki, e)özel eğitim ve rehabilitasyon merkezlerindeki bebeklere ve küçük çocuklara ulaşmasına yardımcı olacaktır. Önerilen modelin, ileride ortaya çıkabilecek girişimlere ışık tutabileceği ve ilk mesleki çalışmalardan erken çocukluk mesleklerine kritik geçişi güçlendirebileceği düşünülmektedir.

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INTRODUCTION

Families undoubtedly make a fair number of efforts so as to improve their children's lives and ensure their development (Newman & Leochico, 2022). In this direction, especially the first five years are of vital importance. The said period, entitled as the early childhood period, is a period during which children acquire critical behaviors and accelerate their physical and cognitive development (Zhou & Wang, 2023). Throughout the period in question, the child's brain develops faster than ever. By the age of 3, approximately 80% of the cognitive capacity is known to be formed. Thereupon, in these years, the child needs to grow up in a safe, secure, and loving environment so that the brain can develop healthily and reach its full capacity (Ayyıldız & Yılmaz, 2023b; Breivik & Costa-Ram´on, 2022). To this end, families should assure that children eat right and support their mental development with the right stimuli. What is more, the solid foundations to be established in such period involving the first five years of age can warrant that the health and well-being of the child can continue throughout life and are passed onto future generations (Currie & Almond, 2011). It is also worthy of noting herein that quality early childhood development is of great importance for the equal and fair implementation of children's rights and for achieving national development goals in the longer term (Çeviker et al., 2018). Howbeit, not every child has the same or similar opportunities and hence cannot be brought up in an equal fashion. The groups who cannot have a healthy or desirable early childhood, are oftentimes called as disadvantaged children (Janson, 2018). Provided disadvantaged children are to be classified under general headings, those will be the ones with special needs, those receiving treatment in hospitals (e.g., chronic patients), orphaned ones, those exposed to violence or abuse, the ones traumatized (e.g., due to disasters), socio-economically distressed ones (like the children of agricultural workers and alike), marginal /minority groups (such as immigrants and so on). Disadvantaged children are often less likely to have access to the essential components necessary for their healthy development (Amri et al., 2018).

There exist plentiful reasons behind the formation of disadvantaged child groups though. Wars, conflicts of interest, insufficient socio-economic opportunities in particular in the developing or underdeveloped in countries, and deprivation of basic human needs owing to geographical locations are amongst these (Fothergill, 2017). These problems are not always people oriented or systemic. From time to time, nature-oriented problems such as global epidemics, floods, and earthquakes may lead to the emergence of these disadvantaged groups or, even worse, add onto the existing issues. Such occurrences can seriously threaten lives, health, and well-being of vulnerable children aged 0-5 exclusively. At this very point, the *disadvantaged children aged 0-5*, comes to the fore as the first and foremost variable of the research. Every year, a considerable number of projects and practicum are implemented worldwide by UNICEF (the United Nations International Children's Emergency Fund) with a view to supporting disadvantaged child groups and improve the adverse conditions (Johnson et al., 2014). That said, although these practices contribute significantly to improving any form of visible disadvantage, they cannot fully solve the roots of problems. Within this frame of reference, the concept of *sustainability*, which is the second variable of the present research, gains importance. Needless to state that seeking urgent and temporary solutions will help with the resolution of several barriers within a certain period (UNISDR, 2015). Disseminating sustainable solutions and the steps to be taken will albeit open the doors for a healthier development. In this context, numerous countries are taking steps and working on this topic. One of these countries that stands out is Türkiye. As a developing country, Türkiye has an extraordinarily dynamic and challenging sphere for policymakers, educators, decision-making bodies, agencies, and Non-Governmental Organizations (NGOs) (Ayyıldız & Yılmaz, 2024).

In light of all these, this study aims to prepare a novel model; a proposal for the stakeholders engaged in the education of millions of preschool students and more than half a million refugee children aged 0-5 in Türkiye. High school students studying child development, undergraduate student teachers i.e., preschool teacher candidates as well as other university students along with Non-Governmental Organizations (NGOs) constitute the key groups in the current research. With that being said, on account of the earthquake disasters took place in series in Türkiye on February 6, 2023, more than 10 provinces and approximately 15 million people were adversely affected and tens of thousands lost their lives where others left with disabilities (URL-1, 2023). This disaster caused all the children in the regions aged between 0-5 to experience disadvantages at varying degrees. On top of these, the problems of disadvantaged groups went beyond specific themes and took on multiple disadvantaged identities. For this very reason, the scope of this research has been expanded yet still concentrating specifically on disasters. In addition to the observable stakeholder groups, volunteers, public and private institutions and organizations, national/international aid organizations, media groups, and individual initiatives are also addressed through the stakeholder scope. This has also brought a new dimension to the research, namely, the *social cohesion* variable (Danquah & Ouattara, 2023).

On the other hand, the enlargement of the stakeholder group and the fact that multiple disadvantaged groups 'replaced' the formerly disadvantaged groups made it necessary to proceed more systematically. Because of the earthquake disasters, immediate and longer-term needs altered in their quantity and size, emphasizing professional support. In order to overcome this burden and to carry out the process in a coordinated manner, it is deemed essential to display a stance that of an expert in the communication with the groups to be assisted. All these result in the materialization of two distinct notions alongside those of some novel parametres. The fourth variable, in fact the kernel, of the study became *mentoring practices* in this sense. Modus operandi pertaining to mentoring should be conducted actively for all stakeholder groups to contribute to the desired development vertically and horizontally and to intervene in the process efficiently (Carvalho & Santos, 2022). It is of great importance for high school students in the child development departments and preschool teacher candidates together with the other undergradutes and NGOs reach out all disadvantaged groups backing them up for the further expansion of the field of practice.

The fifth variable of this research is the *competent human resource* that provides horizontal and vertical development of mutual sort with the help of mentoring practices (Murphy & Olsen, 2008). When a disaster happens, applications that cover a wider area and rurgent interventions are vital. Thus, competent human resources take part in support practices to be offered for disadvantaged children. Another prominent outcome of disasters is the *Reduction of Inequalities*, one that is linked to the United Nations Sustainable Development Goals. The earthquake disasters shifted the already recognized disadvantageous situations and triggered the formation of new marginal groups and/or multiply vulnerable groups. This brings to mind the concept of a *chain of responsibility,* as a variable (Yu et al., 2023).

To coordinate both mentoring practices and aid-related practices at the national and international level, it is significant to construct the responsibility chain made up of responsible persons and organizations acknowledging their duties and competencies (Ayyıldız & Yılmaz, 2023a). Chain of responsibility practices are strategic in identifying each and every step to be taken signifying levels of intervention. Stress management in disasters, the effective uses of human resources, and optimal resorting to aid and support are all made possible with an effective chain of responsibility. Finally, there arises a need for one more variable to put all the previously discussed variables together for the well-being of the disadvantaged groups between the ages 0-5. This variable can be expressed as *psychosocial support.* Whilst psychosocial support functions as part of needs of 'regular times', it turns out that such support needs to be directed to simply all taking part in the relevant processes (Baldschun, et al., 2019).

The model put forward through this study wishes to strengthen the support of all the stakeholders through mentoring practices catering to all the parties while situating the disadvantaged children between the ages 0-5 in the center. In addition to the main objectives, the model proposal also plans to implement culturally sensitive teaching practices, to realize inclusive and socially fair trials, and to gain emotionally demanding work habits. It is believed that the proposed model can cast light on the initiatives that uncover and strengthen the critical transition from initial professional education to early childhood occupations. The topics and model dimensions covered in this research seek to answer these questions:

1. How are the main characteristics of disadvantaged groups in the 0-5 age range and those of their families that entail provision of support services?
2. What should be done for the above groups embracing their innate disadvantages?
3. What stakeholders should form the social unity of power, competent human resources, mentoring practices, and chain of responsibility in the support services to be provided for the aforementioned disadvantaged groups?
4. How should be the intervention levels and areas of intervention for the disadvantaged groups mentioned above?
5. What should be the short (emergency), medium (temporary), and long (sustainable) term support practices for the groups above: prior to, during and after disasters?
6. What roles stakeholders gain in relation to vertical and horizontal learning within the scope of mentoring practices?

METHOD

A model proposal is outlined in the present study, which encompasses the applications to be made for the disadvantaged groups in the 0-5 age range and also for their families before, during and after a disaster such as a devastating quake. The model proposal prepared tried to target the characteristics of the 0-5 age group and their families, the practices that should address disadvantaged children aged 0-5 and their families bearing in mind social unity, competent human resources, mentoring practices, and a sense of responsibility. With this in mind, organizations such as the chain of action were elaborated on, support applications to be provided in the shorter, medium and longer terms were dwelt upon, the intervention levels and intervention areas for the disadvantaged groups were delved into, and information was given on how vertical and horizontal learning would take place within the scope of the relevant mentoring practices.

Comprehensive document analysis and comparative inferences were referred to and the application and intervention processes in the line of the related literature were examined. Hence a viable model proposal was put forward by blending it with meaningful and purposeful implementations. While the model proposal was being prepared, support from the field experts was taken at all stages, and maximum attention was paid to validity and reliability criteria (Flick, 2009). Systematic reviews, comparative inferences, and in-depth literature reviews were performed accordingly (Krippendorff, 2004). Thereupon, any conceptual errors were minimized in the classifications within the model structure (Marshall & Rossman, 2006).

FINDINGS

The findings obtained are shared in a particular order, considering the research problems.

How are the main characteristics of disadvantaged groups in the 0-5 age range and those of their families that entail provision of support services?

Reno Lenoi, the French Minister of Social Relations, classified disadvantaged groups in Europe in 1974 (Çeviker et al., 2018). According to Lenoi's categories, the disadvantaged groups are as follows: physically and mentally disabled, alcohol addicts, the elderly, criminals, and abused/violent children. As can be seen, disadvantaged children were solely described as physically and mentally handicapped and as abused/violent children. In a study conducted in the following years, disadvantaged child groups

were 'grouped' as homeless children, children incited to crime, children involved in child labor, children exposed to abuse/violence, children in migrant and refugee status, and the ones with mental and/or behavioral disorders (URL-2, 2023).

When the literature is checked, the disadvantaged groups by UNICEF (2018) are put forth as children with disabilities, those in underdeveloped regions and rural areas, in poor cities, as children in conflict/war environments, as those whose mother tongue is different from that of the majority of the people living in the same country as them, as international immigrants, and as refugees. Besides these, children receiving hospital/home treatment as a result of accidents, chronic illnesses, orphaned children, children with special needs, children suffering from poverty, children who have experienced a trauma are among these groups. This understanding can also involve children who are in distress (for instance, the children of agricultural workers and so forth). The earthquake disasters in Türkiye impacted the disadvantageous situations of the children aged 0-5 and led to the formation of multiply disadvantaged groups. Furthermore, unless timely and appropriate interventions are made, a disadvantageous cycle occurs and causes the emergence of new groups of disadvantaged sort. In Figure 1, the Disadvantage Cycle is depicted showing the characteristics of disadvantaged child groups and their families.
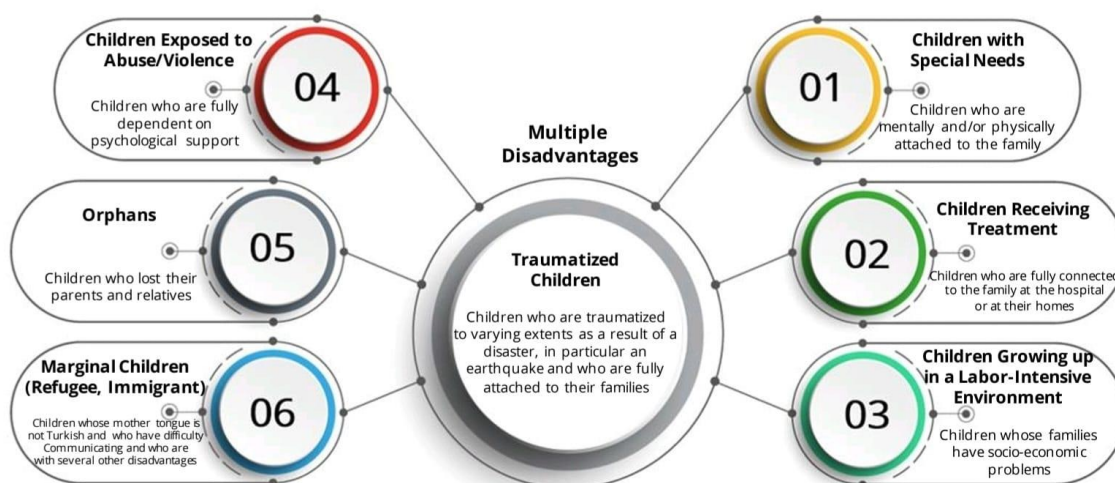
Figure 1. Disadvantage Cycle

What should be done for the above groups embracing their innate disadvantages?

Disadvantaged children between the ages of 0-5 stand out as the most vulnerable thence in need of assistance in disaster situations. Apart from self-care, these groups, who lack stress management, decision-making, or survival skills in disasters and who are physiologically inadequate, require a set of systematic help. It is eminent to take precautions prior to and after disasters such as earthquakes, which are highly destructive causing massive damage. These measures concern both the disadvantaged groups and their families. Table 1 shows the practices that should be taken into account before and after an earthquake.

Table 1. Applications Before and After the Earthquake

What to Do Before an Earthquake	- Under the leadership of NGOs, preschool teacher candidates, sociology, psychology, medical school, and counselling students as well as high school students studying child development should be informed about disaster risk management and confirm they play an active role in the development of action plans and possible solutions. -Planning the mitigation, preparedness, response, and improvement practices step by step and making sample applications -Preparing harm reduction plans to be implemented in the short, medium, and long run -Determining the organizational structure and mentoring steps respecting coordination, cooperation, and communication
What to Do After an Earthquake	*__Organization Processes:__* -Types of service areas and groups for the disadvantaged groups aged 0-5 are detected, NGOs take an active role - Process analysis, job divisions, and job descriptions of high school students, pre-school teacher candidates, sociology, psychology, medical school, and counselling students with volunteers and experts working in NGOs are verified
	__Analysis Processes:__ -Identifying the disadvantaged children aged 0-5 and directing them to high school students studying child development, sociology, psychology, medical school and to counselling students, to preschool teacher candidates, and NGOs as portrayed in Figure 1

What to Do Before an Earthquake	- Under the leadership of NGOs, preschool teacher candidates, sociology, psychology, medical school, and counselling students as well as high school students studying child development should be informed about disaster risk management and confirm they play an active role in the development of action plans and possible solutions. -Planning the mitigation, preparedness, response, and improvement practices step by step and making sample applications -Preparing harm reduction plans to be implemented in the short, medium, and long run -Determining the organizational structure and mentoring steps respecting coordination, cooperation, and communication
	-Affirming health, housing, and basic needs are met and psychosocial support services are provided within the first 72 hours after a disaster ***Intervention Processes:*** -Determining weak, moderate, and advanced interventions for the disadvantaged children aged 0-5 and asserting the interventions of the stakeholder groups -Arranging collaboration and cooperation of competent human resources, using human resources with maximum efficiency -Warranting an efficient information flow; from experts to beginner-level individuals as part of the mentor-mentee relationship -Continuous improvement and updating of the communication network
	Integration Processes: -Coordinating the services provided by high school students, sociology, psychology, medical school, and counselling students and teacher candidates for the disadvantaged children aged 0-5 within the scope of the chain of responsibility via inviting NGOs, increasing or decreasing the capacities of the practices
	Monitoring, Evaluation, and Improvement Processes: -Systematic supervision and evaluation of the activities, improvement takes place when need be -Promoting the active use of mentoring practices mutually, horizontally, and vertically

What stakeholders should form the social unity of power, competent human resources, mentoring practices, and chain of responsibility in the support services to be provided for the aforementioned disadvantaged groups?

The most eminent issue in a disaster is insuring fast and practical assistance. In such cases, individuals from all parts of society who want to help come out and make an effort do their best. Nonetheless, disasters call for systematic organizing for which only professionals and experts should take over the responsibility. Competent human resources gain more importance here. On the other hand, this process cannot be resolved just with competent human resources, and the right members of a society must be mobilized as well. This brings to life a formation called social unity of power, which necessitates that mentoring practices are executed horizontally and vertically, and the chain of responsibility is utilized in an active fashion. Figure 2 helps visualize stakeholder groups, social unity, and chain of responsibility.
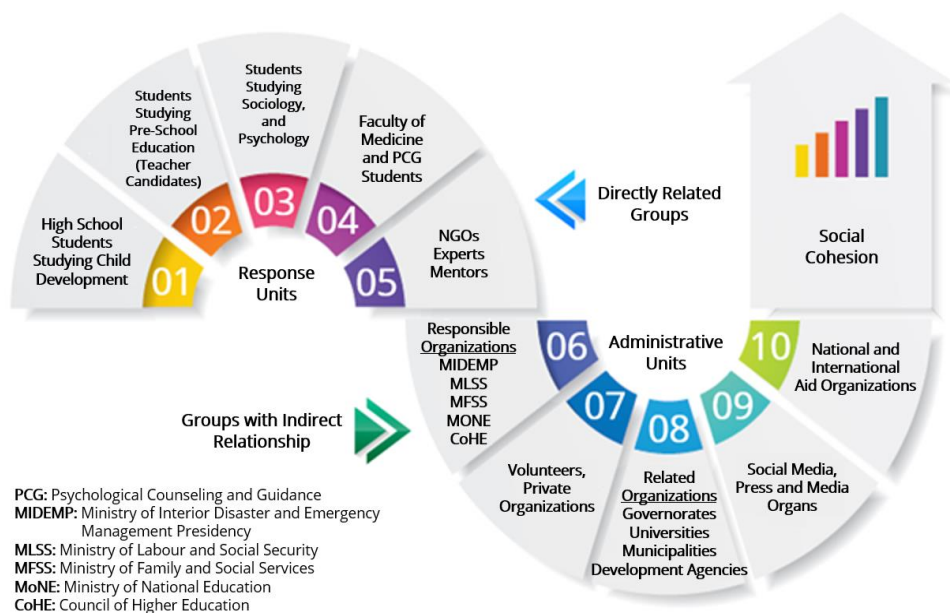

Figure 2. Disadvantage cycle stakeholder groups, social cohesion and chain of responsibility

It is clear through the above figure that several bodies and groups constitute a society. These groups are primarily divided into two administrative units and response units. The response units consist of groups directly involved in the process and who are actively engaged in the field. The latter include upper groups that track the administrative and managerial processes owning an indirect relationship with the processes. Whereas the whole system hints at the existence of social unity, the practices are called chain of responsibility practices.

How should be the intervention levels and areas of intervention for the disadvantaged groups mentioned above?

After the earthquake disasters, disadvantaged groups and families in the 0-5 age range would definitely need a certain level of intervention and support. When Figure 3 is checked, it appears that the disadvantaged group needing 1st level intervention should attain the support of local opportunities and that of the health professionals. The social power union's 1st and 2nd intervention units are sufficient at this level.

It is contemplated that the disadvantaged groups in need of 2nd level intervention need support with regional opportunities and in health and playgrounds, and intervention units 1, 2, and 3 of the social power union may be adequate.

As the severity of the earthquake disaster enhances, the disadvantaged group in need of 3rd level intervention needs opportunities at the provincial level, and the intervention areas grow and expand reaching out the fields of health, play, and art, and the intervention units 1, 2, 3, 4 and 5 of the social power union will be meaningful.

The groups in need of level 4 intervention now need facilities at the national level and areas of health, play, arts, and psychosocial support, and intervention needs to be scattered across the country. For the intervention at the 4th level, the intervention units numbered 1, 2, 3, 4, 5, 6, 7, 8, and 9 of the social unity may be purposeful.

The disadvantaged groups needing a level 5 intervention need international scale support in the areas like health, play, arts, psychosocial development, and sustainable education. Moreover, the entire social unity of forces should intervene at the international level.
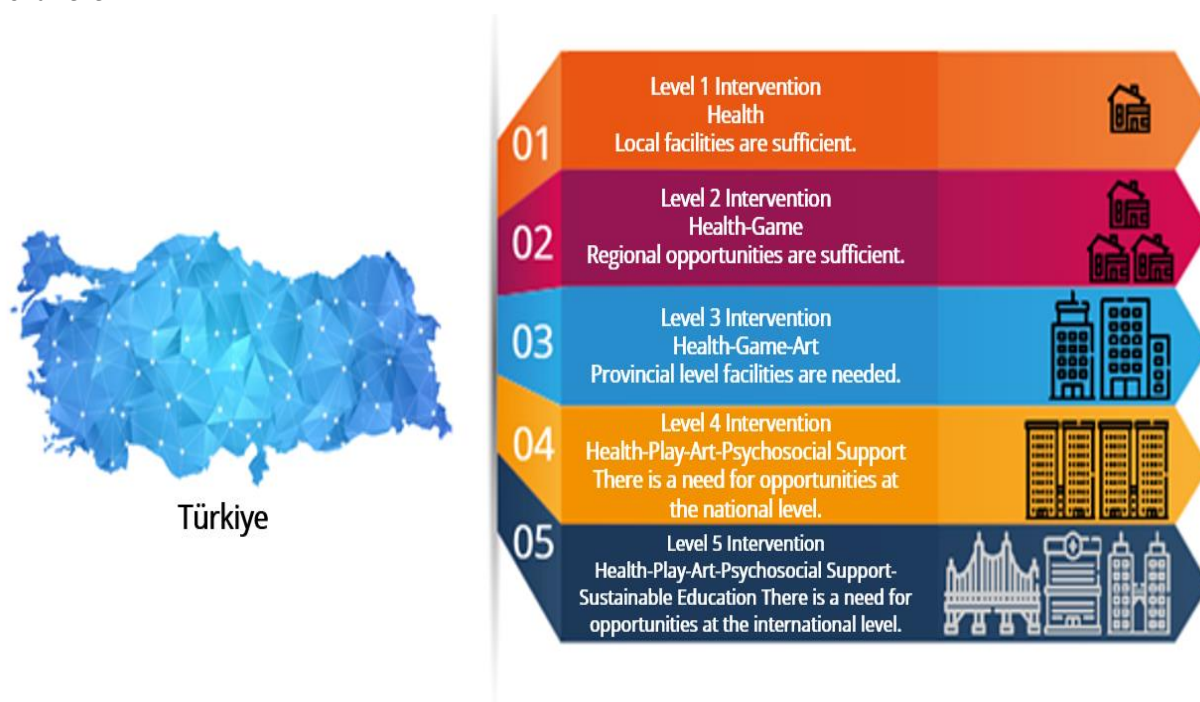
Figure 3. Levels of Intervention and Areas of Intervention

What should be the short (emergency), medium (temporary), and long (sustainable) term support practices for the groups above prior to, during and after disasters?

Post-disaster response, mitigation, and recovery efforts should progress systematically and gradually. These are divided into three main periods, that is, short, medium, and long-term ones. The applications to be provided in the short (emergency) term consist of the first 72 hours after the disaster and the first 30 days following that. The implementations in the medium (temporary) term contain those that come into play within 1 month to 12 months. Support practices to be offered in the longer (sustainable) run comprise of the activities to be completed 1 year to 3 years after the disaster. In Figure 4, support applications that can be made in the shorter, medium, and long terms are highlighted.

> - Establishing child-friendly areas in cooperation with NGOs.
> - Establishing response teams gradually, starting from high school students to NGOs and experts.
> - Carrying out activities and psychosocial support practices for disadvantaged child groups aged 0-5.

> - Determination of local, regional, provincial and national based intervention groups and coordination units in cooperation with NGOs.
> - Implementation of health-related, play and/or art-oriented psychosocial support and sustainable education practices.

> - Completion of permanent and sustainable housing environments.
> - Carrying out workshops, in-service trainings and volunteering practices for disadvantaged groups aged 0-5.
> - Ensuring that families, teachers and stakeholders studying in the field of child development have a permanent and up-to-date communication network.
> - Supporting the sustainability of mentoring practices.

> - Finalization of improvement and adaptation studies.
> - Ensuring the sustainability of mentoring and psychosocial support practices with a sustainable education system.
> - Systematic renewal of competent manpower.
> - Keeping the chain of responsibility up to date and being prepared for disasters.

First 72 Hours · First 30 Days · First 6 Months · First 1 Year · First 2 Years · First 3 Years · First 1 Year · 1 to 3 Years

Short Term · **Medium Term** · **Long Term** · **Monitoring, Evaluation, Improvement**

> - Identification of children in the 0-5 age range.
> - Identifying situations where children are disadvantaged/with disadvantages.
> - Communicating with the families of children and meeting their basic needs.
> - Creation of competent human resources and establishment of a communication network.

> - Continuing the normalization and recovery activities after the earthquake for families and disadvantaged children aged 0-5.
> - Carrying on with the psychosocial support activities horizontally and vertically with all stakeholder groups through the mentor-mentee structure.
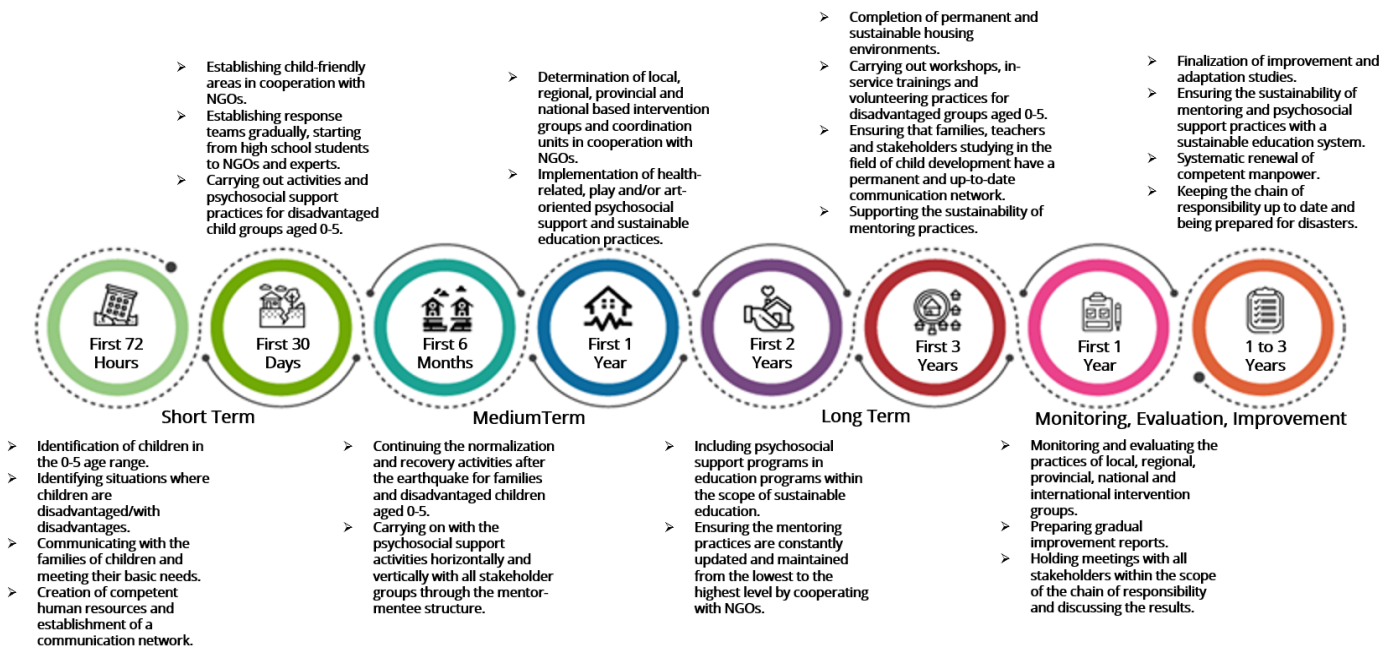
> - Including psychosocial support programs in education programs within the scope of sustainable education.
> - Ensuring the mentoring practices are constantly updated and maintained from the lowest to the highest level by cooperating with NGOs.

> - Monitoring and evaluating the practices of local, regional, provincial, national and international intervention groups.
> - Preparing gradual improvement reports.
> - Holding meetings with all stakeholders within the scope of the chain of responsibility and discussing the results.

Figure 4. Short-, Medium- and Long-Term Support Applications

What roles stakeholders gain in relation to vertical and horizontal learning within the scope of mentoring practices?

Mentoring practices are of utmost importance during disasters. Horizontal and vertical applications need to be realized to make full use of the competent human resources effectively and sustainably. Horizontal mentoring practices should be conducted mutually, that is to say, from bottom to top at all levels. As mentoring intervention levels escalate, there should be a shift from horizontal to vertical practices. As one moves up to the higher levels, the level of authority and expertise also boosts. 1st-level mentoring practices are valid at the local level, 2nd-level mentoring practices at a regional level, 3rd-level mentoring practices at the provincial level, 4th-level mentoring practices at the national level, and 5th-level mentoring practices at the international level. Mentoring practices should be planned in a two-way mentor-mentee relationship.

There needs to be no unilateral self-control or confusion of authority. In times of disasters, the objective is to be able to create competent human resources as soon as possible and, if/when necessary, to stress that social unity is used most effectively. The necessary scsffold should be offered to the disadvantaged groups in the 0-5 age range, taking into consideration the appropriate mentoring level creating child-friendly areas.

Level 5 Mentoring
International Intervention
Social Cohesion

05

Top-Notch Mentoring Practices
Maximum Use of Horizontal and Vertical Mobility

Level 2 Mentoring
Regional Response
(1, 2, 3, 4, 5, 6)

02

Families, Disadvantaged Groups Aged 0-5 and Teacher Training and NGO Collaborations

Level 4 Mentoring
National Level Intervention
(1, 2, 3, 4, 5, 6, 7, 8, 9)

04

Families, Disadvantaged Groups Aged 0-5 and Teacher Training and NGO Collaborations, Mentors, Volunteers, and Initiatives of Private Organizations, Relevant Organizations and Mass Press Releases

National and International Aid Organizations

Social Media, Press and Media Organs

Related Organizations

Volunteers, Private Organizations

Responsible Organizations

NGOs, Experts, Mentors

Faculty of Medicine and PCG Students

Sociology, Psychology Students

Pre-School Teacher Candidates

High School Students Studying Child Development

Social Cohesion

10 9 8 7 6 5 4 3 2 1

Level 2 Mentoring
Local Response
(1, 2, 3, 4)

01

Families, Disadvantaged Groups Aged 0-5 and Teacher Training

Level 3 Mentoring
Provincial Intervention
(1, 2, 3, 4, 5, 6, 7, 8)

03

Families, Disadvantaged Groups Aged 0-5 and Teacher Training and NGO Collaborations, Mentors, Volunteers, and Initiatives of Private Organizations

Figure 5. Mentoring Practices and Mobility Levels

CONCLUSION AND DISCUSSION

In this study, through which the needs of the disadvantaged groups in the 0-5 age range in Türkiye are identified and scrutinized with those of their families exploiting a proposed mentoring model, the relevant intervention levels, and any related measures planned to be implemented in the short-medium-long term, are explored. The children in the 0-5 age range can actually have a fair number of disadvantages (Connolly & Katz, 2019). The children with special needs, those receiving treatment, the ones growing up in a labor-intensive environment, the others exposed to abuse/violence, the orphaned children, and the marginalized children make up the groups most influenced by disasters (See Figure 1). Children who already posseses a disadvantage before a disaster like a huge earthquake becomes an individual with multiple disadvantages. Further to that, should timely and adequate intervention is not made, it is pretty likely that some other issues occur, which cause a disadvantageous cycle (Dagan et al., 2016).

Türkiye is located on an intense earthquake belt. For this reason, the authorities regularly endeavor to implement such projects to improve disaster management and work hard to get prepared for prospective disasters. Yet the earthquakes took place on February 6, 2023 imply that these preparations are not fully sufficient, and it is imperative to implement some alternative/additional practices as the size of the earthquake disaster elevates.

First off, what to do before and after earthquakes for the disadvantaged groups in the 0-5 age range should be planned comprehensively through the salient principles of disaster and crisis management. Aside from the existing plans, implementing the practices (organization, analysis, intervention, integration, monitoring, evaluation, and improvement processes) specified earlier in Table 1 can be an effective and appropriate intervention method. After an earthquake, many people, institutions, and organizations at the national and international levels can request for help and support (Gewirtz-Meydan, 2020) at the same time offering support. During such complicated times, there is a need for attesting competent human resources that can directly intervene in the events setting out the establishment of social unity according to the size of the disaster (See Figure 2). Otherwise, the workforce cannot be used effectively, and confusions may occur. Two units may intervene with disadvantaged groups in the 0-5 age range. These units are expressed as those with direct relations and those with indirect connections. While the groups with a direct relationship are actively involved in the field, those with an indirect relationship are either included in the system or not, depending on the size of the disaster. In the course of a disaster, response levels and the areas of intervention should also be determined well (See Figure 3).

When the accumulated literature is gone through, it is obvious that post-disaster intervention areas cluster as the ones linked to health, play, art, psychosocial support, and sustainable education (İzci & Ünveren, 2017; Griffiths et al., 2017). When the disaster response levels are studied, it is evident that they are hierarchically at local, regional, provincial, national, and international levels. As the level of intervention rises, so does the required intervention area. Once the intervention areas and levels are appointed, it is highly important to implement short (urgent), medium (temporary), and long (sustainable) practices (Kodal et al., 2018) and to diagnose the mentoring patterns in this process (See Figure 4). Mentoring practices are carried out horizontally and vertically depending on the level of intervention (See Figure 5). The steps of social unity come to the fore once again in this section, and in horizontal and vertical mobility, applications always progress in two diverge directions. There is no unilateral mentoring process. Implementing the mentoring practices most sucessfully contribute to the sustainability of the competent human resources within the mentor-mentee relationships.

Practical Implications

This study portrays a comprehensive mentoring model that might be adopted in the territories where there are disadvantaged children. The model emphasizes the role and place of solidarity welcoming the potential support of all the parties in an inclusive way. It is hoped that the model can set an example through the cooperative and collaborative acts it points out by all the responsible groups, volunteers, policy makers, and simply by humans.

Limitations and Future Research

This research italicizes the cases of the children aged between 0-5 in particular after a big-scale disaster taking place in a developing country, where these groups emerge with divergent and intersecting disadvantages. It is believed that the rather unique demands and needs of these children and those of their families make this study an authentic one but cross-national research in a world full of wars, conflicts and natural disasters can be of even more help.

Declaration of Conflicting Interests

The author declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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Statements of publication ethics

I hereby declare that the study has not unethical issues and that research and publication ethics have been observed carefully.

Author contribution statements

The research was prepared by a single author.

Ethics Committee Approval Information

There were no human participants in the research process due to document review and model proposal development. Therefore, ethics committee permission was not required.

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| Research Article / Araştırma Makalesi|

Promoting Gender Equity through Teacher Education: A Comparison of Turkish and American Preservice Teachers' Perspectives

Öğretmen Eğitimi Yoluyla Toplumsal Cinsiyet Eşitliğinin Desteklenmesi: Türk ve Amerikan Öğretmen Adaylarının Bakış Açılarının Bir Karşılaştırması[1]

Pınar Mercan Küçükakın[2]

Abstract

Gender perception and beliefs of teachers constitute a significant dimension of gender inequities in education. Even in societies that have made significant progress in achieving gender equity, the structure and content of teacher education remains insufficient to create gender awareness among teacher trainees and to develop an egalitarian understanding of education. Utilizing a multiple case study design, the present study examines the extent to which the teacher education programs in two different countries, Türkiye and the USA, prepare pre-service teachers to be gender sensitive in their practices as teachers. Data were collected through semi-structured interviews with 22 student teachers from two countries. Student teachers talked about their experiences inside the teacher education programs and their views regarding how issues surrounding gender were embedded into the teacher education curriculum. Interviews revealed the nature and quality of teacher education, social mechanisms and relations within the teacher education programs in shaping the gender norms of prospective teachers. The study has important implications for educational policies, school practices, and teacher education programs.

Öz

Öğretmenlerin toplumsal cinsiyet algısı ve inançları eğitimdeki cinsiyet eşitsizliklerinin önemli bir boyutunu oluşturmaktadır. Cinsiyet eşitliği konusunda önemli ilerlemeler kaydeden toplumlarda bile öğretmen eğitiminin yapısı ve içeriği, öğretmen adaylarında cinsiyet farkındalığı oluşturma ve eşitlikçi bir eğitim anlayışı geliştirme noktasında yetersiz kalmaktadır. Bu çalışma, çoklu durum çalışması deseni kullanılarak, iki farklı ülkedeki (Türkiye ve ABD) öğretmen eğitimi programlarının öğretmen adaylarını öğretmenlik uygulamalarında toplumsal cinsiyete duyarlı olmaya ne ölçüde hazırladığını incelemektedir. Veriler, iki ülkeden 22 öğretmen adayı ile gerçekleştirilen yarı yapılandırılmış görüşmeler yoluyla toplanmıştır. Görüşmelere katılan öğretmen adayları, öğretmen eğitimi programlarındaki deneyimlerini ve toplumsal cinsiyetle ilgili konuların öğretmen eğitimi programlarına nasıl dahil edildiğine ilişkin görüşlerini sunmuştur. Görüşmeler, öğretmen eğitiminin niteliği ve kalitesinin, öğretmen yetiştirme programlarındaki sosyal mekanizma ve sosyal ilişkilerin öğretmen adaylarının cinsiyet normlarını şekillendirdiğini göstermiştir. Araştırmanın eğitim politikaları, okul uygulamaları ve öğretmen yetiştirme programları açısından önemli çıkarımları bulunmaktadır.

INTRODUCTION

Gender perception and beliefs of teachers constitute a significant dimension of gender inequities in education. Teachers may have stereotyped assumptions about the intellectual, emotional, and physical abilities of boys and girls, which results in differential treatment and sexist practices in classrooms (Chapman, 2002; Pollock et. al, 2021). In order to achieve gender equality in education and to create a gender-sensitive school environment, it is important to develop the practices of gender awareness and sensitivity among teachers. Even in societies that have made significant progress in achieving gender equality, the structure and content of teacher education can be insufficient to create gender awareness among teacher trainees and to develop an egalitarian understanding of education (Sanders, 2001; Sanders, 2003; Lumadi & Shangwe, 2010; Zittleman & Sadker, 2002; Lahelma, 2011; Esen, 2013). Engebretson (2016) asserted that the issue of gender is often neglected in teacher training in many countries, where gender sensitization courses are often not provided for pre-service teachers. Often, there is limited classroom time for discussions about gender in teacher education programs, and pre-service teachers are not prepared to challenge inequitable educational practices and to confront gender stereotypes (Engebretson, 2016). The purpose of this study, then, is to explore the role and effects of teacher education in relation to raising gender awareness of prospective teachers. The study examines and compares how teacher education programs in Türkiye and the USA prepare prospective teachers to be gender sensitive in their practices as teachers. The investigation contributes to national and international literature by providing a qualitative analysis of the experiences and perspectives of prospective teachers at different teacher education programs. The study provides a basis for policy discussions concerning the inclusion of gender equality in the design and implementation of pre-service curricula by identifying prospective teachers' needs with respect to equitable classroom practices aimed at improving the quality of education for all.

Gender and Education

Gender can be broadly defined as socially and culturally constituted roles and expectations attributed to men and women based on assumptions about the characteristics, behaviors, and emotions of men and women (Anselmi and Law, 1998). Basic differences between men and women are shaped by socialization processes and upbringing experienced by individuals (Rollins, 1996). Because gender roles are not of biological origin, but are socially constructed, they are simultaneously productive of discursive practices that shape how individuals naturalize differences between men and women and reproductive of patriarchal power relations that institutionally normalize advantages for men. For this reason, gender roles vary by society and time, and they are learned in the socialization process of individuals (Allan, 2008). The ideas, actions, and feelings defining gender identities are context specific, and must be learned before they can be performed. While the meanings assigned to a girl, or a boy, can change over time and in relation to different cultural contexts (MacNaughton, 2006), gender role assignments involve a process of essentialization and differentiation that defines the meaning of "womanhood" versus "manhood." As Cameron (1997) argued, "becoming a woman" is something one continuously reaffirms and displays publicly by behaving in line with the cultural norms defining masculinity and femininity. Again, these essentialized notions about gender roles are shaped by social norms that perpetuate patriarchal power and subordinate women to men (Stromquist, 1990).

Family and school are important social institutions where the concept of gender is learned and reinforced (Dahal et al., 2023). Gender socialization in the family can impact gender differences in learning. For example, a child's intellectual and social development are linked to parental attitudes and behaviors and the acceptance or rejection of gender stereotypes (Sadker & Zittleman, 2016). Pierre Bourdieu argued that education is an ideological site that sustains a male dominant social order and reproduces gender inequities (Bourdieu,1998). Scholars have identified the role schools play in the reproduction of social classes and gender relations based upon the cultural hegemony of patriarchy (Bowles & Gintis, 2011). According to Marchbank and Letherby (2014), the organization of schools, official and hidden curricula, and social relations in the classroom contribute to gender discrimination. Colclough (2004) and Dillabough (2006) confirm that gender stereotypes are communicated to students through hidden and implicit messages. Other studies point to unequal attention and treatment given to girls in the organization of schools, including classroom and school culture that cause girls' low self-esteem, gender stereotyping in classroom content and curriculum, stereotyped assumptions in relation to sexes and assumed difference in physical and cognitive abilities (Colclough, 2004; Gunderson et. al, 2012; Pollock et. al, 2021; Valley& Graber, 2017).

While gender intersects with other categories of one's identity, gender role expectations differ across different cultures, and across different social classes within the same society (Banks, 2016). Prior research showed that gender intersects with other statuses in complex ways that influence educational experiences of students from different cultural and social groups (Asher, 2007; Grant & Zwier, 2011; Pollard, 2016). According to Pollard (2016), intersections of gender and race were associated with differential school experiences and had implications for educational outcomes of girls and boys of color in the USA. More specifically, students from minority groups were directed to gendered occupations and rarely recommended for non-traditional career options. Minority students internalized the low expectations and accepted those orientations as their own aspirations (Pollard, 2016). Similarly, Sayılan and Özkazanç (2009) asserted that gender intersects with social class in the ways that shape schooling experiences of girls and gendered relations in Turkish schools. Patriarchal values and toxic masculinity at schools put

greater pressure and control over the girls who belonged to lower social classes. The secondary status imposed on them was normalized and internalized by girls due to a lack of alternative and oppositional gender discourses (Sayılan & Özkazanç, 2009).

Training Gender-Sensitive Teachers

Setting the right teacher training curriculum that facilitates engagement with gender-awareness is a demanding, but extremely important, process. An inclusive curriculum allows teachers to receive and interpret content that can influence how they will perform as teachers (Sadker & Zittleman, 2016). Transformations in school practices to make schools egalitarian institutions cannot be achieved without challenging normative gender perceptions and beliefs of teachers, as they are the crucial agents of change (Bourn, 2016). It is important to raise teachers' gender awareness for effective implementation of gender equity policies and improving the quality of education (Esen, 2013). Teachers with sound knowledge of gender issues in education can create a democratic and equal learning environment for all students, resulting in greater participation of girls in the classroom and improved gender relations in educational settings (Sadker & Zittleman, 2016). Despite this, certain studies have found that teachers believe girls to be less intelligent than boys, and that girls are normalized to settle for less well-paid jobs especially in patriarchal societies (Colclough, 2004; Mahlase, 1997). This problem is worsened by the fact that gender issues are not sufficiently addressed in teacher education programs in many countries, as knowledge and skills necessary to gain gender sensitivity and awareness are not adequately provided to prospective teachers (Colclough et al., 2003; Esen, 2013). Similarly, there are also studies showing that gender-biased attitudes and expectations of teachers cause gender inequities in the classroom environment (Colclough, 2004; Sayılan, 2012; Tan, 2010; Valley & Graber, 2017). Valley and Graber (2017) asserted that when the teachers lack gender awareness and knowledge about gender issues, they cannot create a gender inclusive environment in their classrooms. Within this context, many studies have been conducted around the world to investigate the awareness of teacher candidates on gender issues (Esen, 2013; Hoffman et al., 2018). Prior research indicates that teachers often lack knowledge and skills to ensure gender equality in education due to limited or no coverage of the topic in the pre-service curriculum (Esen, 2013; Engebretson, 2016).

In the United States, courses that discuss gender inclusion and equity are often embedded within pre-service teacher multicultural education curricula that also address issues relating to race, class, and ableness (Banks, 2016). The units on gender focus on the historical development of the concept of gender, (with gender understood as a socially constructed male/female oppositional binary), that discuss differences and inequalities between men and women's pay, unequal access to education and healthcare, et cetera (Pollard, 2016). In the last decade, the issues of sexuality and heteronormativity, (as a medical practice of naming and ordering based upon physiological differences), are now included within the discussions concerning gender inequities, and emphasize training teachers to be sensitive and accommodating to Lesbian, Gay, Bisexual, Transgender, Queer or Questioning (LGBTQ) concerns in the classroom (Hanson & Richards, 2019; Page, 2017). In the United States, to teach gender inequities in pre-service education is to simultaneously bring issues of sexuality and heterosexism into a larger multidimensional conversation that discusses multicultural education in relation to human rights, democracy, and social justice (Smith, 2009; Sirota, 2019). In-class discussions often use the theoretical framework of intersectionality to provide additional insight into the complex and uneven processes of identity formation and performance (Mayo, 2013; Grant & Zweir, 2011; Pennell, 2017).

In Türkiye, the need to include "gender equality" as a subject matter in undergraduate and graduate education for prospective teachers was emphasized in the National Action Plan on Gender Equality published by the Directorate General on the Status of Women (KSGM, 2008). Despite this, teacher education programs in Türkiye still do not have a compulsory course on gender (Esen, 2013). Today, in Türkiye, there are educational policies that compromise the social status of women and disadvantage girls, making the need for equipping prospective teachers with an egalitarian perspective and the skills to resist sexism in education even more important (Mercan Küçükakın & Engin Demir, 2022a). Studies conducted to examine the awareness of teacher candidates on gender in different countries around the world and in Türkiye have found that teacher candidates hold gender stereotypic views. Even so, it is also known that receiving education about gender issues can have positive results in developing gender awareness and an egalitarian perspective in teachers (Esen, 2013; Mistry & Sood, 2013; Schwarts &Siniscope, 2013). In more recent research, Pollock et.al (2021) found that taking a gender course as part of a teacher education program changed the implicit and explicit biases of pre-service and in-service teachers regarding the physical abilities of girls and enhanced their awareness and skills to address gender equity in their classrooms. Pollock et. al (2021) concluded that teachers need training on gender equity to become aware of their own biases and sexist educational practices and to become gender equity advocates. As such, the current study analyzes the ways in which pre-service teachers think about the interrelationships between gender, equity, and education as an intersectional field of relations that have direct effects on their lives as teachers and as students.

METHOD

The study made use of multiple case study design, and qualitative research methods were utilized since this type of research examines the quality of relationships, activities, situations, or materials in-depth to obtain a complete picture of a particular context (Fraenkel & Wallen, 2003). Utilizing a multiple case study design, the present study examined how two different teacher

education programs (in the USA and in Türkiye) shaped student teachers' perspectives of gender issues in education and prepared them to be gender sensitive in their practices as teachers.

Participants

Türkiye and the USA exhibit differences in both culture and policies related to the training of prospective teachers. Recognizing that the gender perceptions of preservice teachers are socially constructed and influenced by their experiences in teacher education programs, this study aims to explore the role and effects of teacher education programs in relation to raising gender awareness of prospective teachers. The research specifically investigates and compares the strategies employed by teacher education programs in Türkiye and the USA, with a focus on how these programs equip student teachers with the essential skills to be gender-sensitive in their roles as educators. Data were collected through semi-structured interviews with 22 student teachers. A total of 11 interviews were conducted with voluntary student teachers enrolled in elementary education, with a social studies minor, available to the students enrolled in Elementary Education teacher certification program at a Midwestern University in the USA. Completing a minor is not mandatory for the K-9 certification program, but students may choose to pursue one. In addition to their coursework in elementary education, the students pursuing the Social Studies minor acquire an in-depth understanding of social studies by completing a 24-credit coursework. This includes two courses in History and Civilizations, one course in Lands and People, along with a course focusing on Global Comparative or Non-Western Cultures. Students also have the option to select elective courses from other departments to fulfill the program's coursework requirements. In Türkiye, participants were recruited from the faculty of education in a public university in Central Anatolia and 11 student teachers enrolled in the social studies education program were interviewed. The Social Studies Education program is a Bachelor of Arts (BA) program operating within the Department of Turkish and Social Sciences Education. In Türkiye, higher education has a centralized system where the curriculum and content of undergraduate programs are established by The Higher Education Council (HEC), the governing body overseeing higher education institutions in the country. The Social Studies Education program provides both theoretical and practical courses utilizing an interdisciplinary approach. The coursework encompasses obligatory and elective courses covering pedagogical knowledge, subject area knowledge, general knowledge as well as practical experience in the field. Courses in subject area knowledge include the topics in social studies such as history, geography and civics (HEC, 2023). Purposeful sampling strategy was utilized for the selection of participants. This strategy employs a snowball sampling method to provide "information-rich" cases for an in-depth analysis of the topic in question (Merriam, 2009). In the first stage, researchers announced the study and asked for volunteers during classes at the faculty of education and interviewed the volunteer student teachers. Interviewed student teachers advised their friends who were information-rich and who had the potential to contribute to the study. Table 1 & 2 summarize the background information of the participants.

Table 1. Background Information of American Student Teachers

Participants	Age	Gender	Educational Background
Ben	21	Male	Public, Secular & Mixed Gender (K-12)
Lily	21	Female	Public, Secular & Mixed Gender (K-12)
Sarah	20	Female	Public, Secular & Mixed Gender (K-12)
Kate	21	Female	Public, Secular & Mixed Gender (K-12)
Sofia	21	Female	Public, Secular & Mixed Gender (K-12)
Emma	22	Female	Public (Grades 3-4 & 7-8) Private (Grades 6-7 & 9-12) Religious & Mixed Gender (K-12)
Olivia	20	Female	Public, Secular & Mixed Gender (K-12)
Julia	22	Female	Public, Secular & Mixed Gender (K-12)
Hazel	21	Female	Public, Secular & Mixed Gender (K-12)
David	21	Male	Public, Secular & Mixed Gender (K-12)
Layla	21	Female	Private, Religious & Mixed Gender (K-12)

Table 2. Background Information of Turkish Student Teachers

Participants	Age	Gender	Educational Background
Selin	19	Female	Public, Secular & Mixed Gender (K-12)
Mert	19	Male	Public, Secular & Mixed Gender (K-8) Public, Religious & Boys Only (Grades 9-12)
Defne	19	Female	Public, Secular & Mixed Gender (K-12)
Ege	20	Male	Public, Secular & Mixed Gender (K-12)
Azra	20	Female	Public, Secular & Mixed Gender (K-12)
Ece	20	Female	Public, Secular & Mixed Gender (K-8) Private, Secular & Mixed Gender (9-12)
Batu	21	Male	Public, Secular & Mixed Gender (K-11) Private, Secular & Mixed Gender (Grade-12)
Kerem	19	Male	Public, Secular & Mixed Gender (K-4) Public, Religious & Boys Only (4-8) Public, Secular & Mixed Gender (9-10) Public, Religious & Boys Only (11-12)
Arda	20	Male	Public, Secular & Mixed Gender (K-12)
Nil	21	Female	Public, Secular & Mixed Gender (K-12)
Merve	20	Female	Public, Secular & Mixed Gender(K-5) Private, Secular & Mixed Gender (6-12)

Data Collection

Data on student teachers' perspectives of gender issues in education were collected through semi-structured interviews with prospective teachers. In the USA, all the interviews were conducted in a private room at the teacher education building. Interviews with Turkish student teachers were conducted online because of Covid-19 restrictions. Online interviews proceeded smoothly, and the researcher did not encounter challenges due to the nature of the interviews. The interviews lasted 30-40 minutes. Responses of the interviewees were recorded and then transcribed by the researchers. To ensure anonymity, names of the participants were replaced with pseudonyms. The interview questions were developed by the researchers based on an extensive literature review of research on gender and education. The interview protocol included questions in domains *"Perceptions Regarding Gender and Gender Issues in Education"* and *"Addressing Gender in Teacher Education."* During the interviews student teachers talked about their experiences inside the teacher education programs and their views regarding how issues surrounding gender were embedded into the teacher education curriculum. Sample questions from the interview protocol included: *Do you think gender equity in education has been achieved in your country? How do you think your experiences at the teacher education program shaped your perceptions of gender equity? Do you think you have gained the necessary skills and knowledge to challenge gender stereotypes in the classroom?*

Data Analysis

The researchers analyzed and interpreted the collected data using content analysis (Creswell & Plano Clark, 2007). Before coding the whole data set, two interviews were coded by two different researchers. The intercoder consistency was calculated, and reliability was ensured with a consistency rate over 90%. At the initial stage of the analysis, each interview was coded using an open coding method and categories and themes were generated in line with the emerging codes. In the second stage, researchers compared codes and categories to check commonalities and differences across the data set, and then themes were refined. Naming of categorizations came from the interview questions, which were developed based on the related literature, and participant responses or the researcher's interpretations, as suggested by Merriam (2009). Following the coding procedures, themes suggested by the whole data set were combined and the findings were written up.

FINDINGS

Defining the problem: The Roots of Gender Inequalities

Interviews with pre-service teachers showed that in both countries, social norms, upbringing, and the patriarchal socio-cultural structure work together to reproduce the cultural hegemony of male superiority. Student teachers from Türkiye mentioned persisting patriarchal values which subjugate women in public and private spheres. As an example, Mert explained that treating girls with traditional attitudes created gender discrimination: *"Inequality dates to old times. Even if we deny it, the Turkish Muslim community is still patriarchal."* Kerem, while discussing the low status of women in Türkiye, linked the oppression of girls in the family to a religiously conservative social structure: "*Gender inequalities in our country mostly stem from the family. It is due to family pressure and religious concerns*." Defne pointed to the social determinants of gender inequities in education as an underlying cause for male superiority in the society, including the preference for male children in Turkish families and gender imbalance in working life. It was clear in her explanation that it was more challenging for girls to enjoy material benefits of education due to patriarchal social structure limiting their life choices:

"Men are always superior in society. They are the ones who can always achieve something. Even if they are not educated, they can find a job. And for this reason, they show a lower level of educational success. They trust their families and do not bother themselves with studying. Girls can only find a job if they are well educated..." (Defne)

American pre-service teachers talked about gender stereotyping in society. For example, Emma explained that "I*f you were to tell someone a story about a nurse, they would assume it's a woman… People usually assume teachers are female. some of them think that women are better with younger children because of the motherly aspect of it."* Student teachers also referred to hierarchical gender relations in their communities and described how parents favored boys over girls. Stating that "*I felt like I wasn't always as independent growing up as my brothers were,*" Julia provided an example of differential treatment girls in American families experience. Similarly, Emma referred to different treatments of girls and boys in her family and cited examples of gender stereotyping in her family:

"I have two little brothers and a little sister. And my dad's expectations are very much boys will do the sports and build things. And not that I can't do those things. He also wants me to be able to do those things, but it's not as enforced. I'm telling him if he's enforcing those on my brothers, he should also enforce them on me... he wants me to be able to write well and read well, the more academic things as opposed to the physical things, he should hold that for my brothers as well." (Emma)

Julia further explained that "*In some way, maybe I have broken the gender norms a little bit by being more independent, despite the gender norms my dad might have put upon me.*" Julia's emphasis on her dad imposing gender norms is an indicator of patriarchal social structure in the USA. Her description below highlights how gender biases manifest in subtle and unconscious ways and create gendered hierarchies even in progressivist families:

" My mom is very independent as well. It's interesting in my household. My mom was always the person who made more money than my dad. So that was kind of a switch of a gender norm. So, she's always very independent, very successful. She's an educator as well. She was an elementary school principal and she's a teacher consultant. So, I think I learned a lot from her, but also understanding like, yeah, I think there's a lot of places where I wish I would have learned things growing up that I was never taught that my brothers were taught. I wasn't taught how to change the oil. Why didn't my father let me mow the lawn? Or think I'm a terrible driver? " (Julia)

Sexism in Education

In the present study, the interviews with the student teachers highlighted how gender norms and traditional gender roles are reproduced inside the field of Turkish education. Selin exemplified how her family's gender norms shaped her educational choices. She also referred to gender biases in educational practices:

"To me, there is no equality yet because men and women are not considered equal in our country... I wanted to study to become a paramedic at the university but my family did not approve of it. Our society thinks it is not suitable for women. All the time, boys did experiments at school. I never saw a girl doing the experiments. Boys were more active in math's classes; girls were in the secondary position. There are definitely more rules for girls. Vice principals are strict about girls' hair or clothing. Here, we have inequality and injustice. Our society is just like that. When women wear short skirts they are criticized." (Selin)

The conversations with the student teachers showed that discriminatory educational practices were normalized through stereotypical assumptions of students' abilities and talents. For instance, Arda explained gender specific division of labor among student teachers like this "*When we are assigned to a group project, boys do the research, girls do the artistic work such as designing the materials. Girls think they are more talented in those kinds of activities too.*" Gender stereotypes and traditional gender roles also limit girls' opportunities to take part in physical activities in physical education classes. In the excerpts below, Ece first provides an example of gender based expectations of student performances in physical education classes, while Azra speaks to gender based orientations and sexist practices that privilege boys in both academic and sports activities by referring to stereotypical beliefs about students' abilities:

"Female and male students take on different tasks. In physical education, the activities of girls and boys are different. The topics we are responsible for are different, for example, while girls are expected to know the measurements of the basketball court, boys are graded for their shooting performance for instance. " (Ece)

"In sports, men were being selected. This applies to competitions and technology-related things. Knowledge quizzes were also like that. In physical education, men are more inclined towards activities that require physical strength. I think it was the reason. " (Azra)

Descriptions of the Turkish student teachers also showed that educational policies and practices perpetuate gender stereotypes about appropriate appearance and behavior. Arda explained that oppressive patriarchal power was enforced through sexist dress-codes, saying that "*they interfere with girls' hair style and color. Dressing appropriately, being neat.*" Student teachers also spoke to how schools reproduce differential standards for men and women. According to Azra, school rules and procedures mirrored the sexist nature of Turkish society. She mentioned the similarities between her family's and the school's treatment of girls in terms of dress and codes of conduct in mixed gender settings:

"There was more pressure on girls. Dress code, rules about hair style and make up. They did not tell the boys. We could not even wear tights. Maybe it was because we were in a mixed-gender environment but we were supposed to be careful. My family tells me, for example, not to take attention in mixed gender settings. " (Azra)

Sofia also brought up discriminatory educational policies and practices, such as sexist dress codes and teaching behaviors in American schools.

"The high school dress code for females was a lot more restrictive. And it was like body parts that, you know, like dressing in normal clothes weren't supposed to be shown. So I would say that, you know, just code that's definitely sexist, because it's like, sexualizing, younger women's bodies. I had this economics class, and the teacher, he was a white male, but he would really only call on white males to participate. I noticed that like when females tried to participate, I mean, they had to raise their hand for a lot longer before he called on them (Sofia)

American student teachers also questioned the underrepresentation of women in STEM fields and administrative positions, which showed that prospective teachers supported gender equity as a pedagogical principle. Both Olivia and Julia referred to social norms and stereotypical mindsets about students' cognitive and intellectual abilities at American schools. Olivia described how cultural stereotypes effectively transport implicit bias in educational settings and shaped academic choices of boys and girls.

"Most stereotyping is really subconscious and as a result of societal norms. I mean, you look at enrollment in STEM classes. And I know that there were definitely not as many girls in the AP science classes that I took. Especially when it was like a hard science like AP chemistry versus like, a softer science, like AP environmental studies. "(Olivia)

Layla connected the underrepresentation of women in the STEM field to discriminatory practices at school, which influence one's self-perceptions of their abilities and educational prospects:

"If there is a project, male students are expected to be the leader. I see it mostly in science, math and like the hands on. Like, you're supposed to build a statue. But when it's like, a literature project. For example, the guys say, "well, I don't know how to do this. So they, by default, give that responsibility to the girls… boys automatically think, oh, since it is literature, that's a feminine subject, I can't lead it. In the STEM majors there's almost l 80% guys 20% girls. That can be correlated to what happens in the lower levels, how girls can continuously be told they can't do this because they're a girl. I think that's a huge difference." (Layla)

Similarly, Hazel commented on the sexist and racist norms reflected in curricula and educational practices, and said she supported equal representation of all genders:

"I think a lot of the time, it's gender stereotypes and behaviors. So boys being picked out of the group for acting a certain way. Girls doing the same behaviors, but not being picked out by a teacher. I know a lot of that happens quite often. I think representation of all genders in the curriculum is still not where it should be. We need to see more of a woman's perspective from it, especially in social studies, like history wise, you can read a textbook and all they'll talk about are our white men." (Hazel)

Julia argued that gender stereotypical beliefs about the characteristics and abilities of students were biased and said *"Often we think girls are more well behaved. They are more manageable or girls as being less defiant… I definitely think there was a little bit more of a bias."* She said that boys were discouraged when the classroom activities required abilities traditionally attributed to girls. The following quote from Julia showed that unless classroom teaching addresses diversity and different needs and interests of all students, it is impossible to challenge gender stereotypes through education:

"I had a social studies teacher in high school. Well, he was often known as being like… giving better grades to girls. Because his curriculum was mostly projects and a lot of the boys didn't enjoy doing the projects. He knew girls liked being in his class because they got good grades, and they enjoyed his type of teaching, boys did not. He was sexist." (Julia)

Similarly, David stated that the American school system is not designed to reflect diversity and adheres strictly to gender stereotypes. Emphasizing the role of the teachers' gender perspective, he explained that gender non-binary students were not adequately represented in educational materials:

"I think looking at the school system right now, a large majority of schools still stick really hard to gender stereotypes… I think about some of the students I have, who are transgender, and just the lack of knowledge teachers have about what that means, and really being able to think ahead and give support to those students, as well as in preparing texts. One of the biggest things that's pretty apparent, is the lack of culturally relevant and age appropriate texts, but also gender appropriate texts. … They don't incorporate other people except for the two binary kinds of genders." (David)

Addressing Gender in Teacher Education

Socio-cultural Environment of Universities

Participating student teachers from both countries drew attention to the role of the socio-cultural environment of the universities and the experiences gained through higher education in forming the views and perspectives of the students. Julia exemplified how the liberal and democratic environment at her American university helped her gain a critical gender perspective. She specifically emphasized that the sociocultural environment and academic activities were mutually reinforcing in changing traditional gender norms towards a more equitable and inclusive understanding of identity differences. She also acknowledged the role of diversity at her campus and said:

"I see a very liberal culture within the university, where they're very focused on exposing us to all different types of genders. And I think it's part of the culture and also put into all different classes. And so that's been, I noticed a huge change within even the people who've come here from other parts of the state that don't get this kind of education." (Julia)

Turkish student teachers also mentioned the changes in gender perceptions and attitudes of individuals once a democratic environment is created in educational institutions. Mert explained how the conservative and oppressive atmosphere in K-12 schools he attended limited female students and said that the university had a more liberal environment.

"My female friends who could not speak at middle school are different here. They are even more active than men. It is because of societal pressure. There was extreme conservatism among teachers, they would shout at you. The atmosphere of the university is not like that; you can speak as you like." (Mert)

Arda also underlined the positive impact of the university environment on girls and said *"At the university, there is a more democratic environment in the classrooms. Girls can also freely express their opinions on any subject."* It was noteworthy in both Arda'a and Mert's narratives that being in a more democratic environment free from societal pressures liberated girls and helped them express their ideas, thoughts and beliefs freely.

The interviews with the student teachers point to the role of interaction between faculty members and the student teachers in shaping beliefs and gender norms of prospective teachers. Ece explained how the women faculty members at the university influenced her as role models. She emphasized the importance of women professors in developing girls' confidence and overcoming gender-based barriers and boundaries.

"When I observed our professors, I admired them. Their success is admirable. Their talks, the way that they showed that we can do as well as, even better than men, was very nice." (Ece)

On the other hand, Ege explained that sexist attitudes and behaviors of faculty members discouraged girls to set high educational and professional goals for themselves. The dialogue between a male faculty member and a female student teacher showed that the professor put rigid limitations on girls through negative messages about their abilities based on gender and social status:

"These topics were not covered in classes, but the attitudes of the faculty members are decisive. There is a professor who looks at a student teacher and says, "You can't be a teacher" and looks at another girl and asks "Where are you from?" The girl says, "I'm from Ismail Ağa (a disadvantaged region)," and the professor says, "You can't do it either. Your hometown is obvious, too." (Ege)

The liberal environment of the university had a positive impact not only on female students but also on male students. Kerem, who spent most of his education at single-sex schools, expressed the positive effect of being in a mixed gender setting like this: *"The environment of the university had a positive effect on me. Even being in the same class with girls, at least you learn to empathize effectively."* In another interview, Ege talked about how he was negatively affected by the sexist environment in the high school he attended. He was often criticized for his interest in literature, which was traditionally considered as an area reserved for women. He further explained that the diverse and liberal environment of the university made him feel at ease as he was no longer under the pressure of gender stereotypical expectations:

"The high school I attended was secular. Most of the male students were interested in volleyball. I don't like sports, though; I've wanted to be a soldier for years. I always served as the library club president, and people would look at me and say, "You hang out with girls, so what are you going to do with reading?" They were surprised that my goal was to become a soldier rather than a sports club member. The university has a more diverse environment. There are people from everywhere, and there is no discrimination between genders. I have not heard any negative comments from anyone. "(Ege)

Teacher Education Curriculum

In the present study, American student teachers expressed that gender issues in education were also addressed through the framework of intersectionality. As an example, Sarah explained that issues of race, culture, diversity and gender were interwoven and that they focused on all aspects of equity in their department:

"The teacher education program made me think more about how we have an unconscious bias towards certain genders, or cultural backgrounds of people. I feel like mostly what our program is focusing on is race and diversity, equality. So we're mainly focusing on including different races, and cultures, more than just genders. But I feel like you have to; you can't do one without the other" (Sarah)

On the other hand, Ben referred to the needs of gender non-binary students and emphasized the insufficiency of the teacher education program in equipping the prospective teachers with skills and competencies to accommodate non-binary individuals:

"I think it has helped, but I think the program could help me a lot more by just providing more specific ways of how to help students who are non-gender binary. Um, yeah, I think it's laid some groundwork, but I think there could always be room for improvement. And I think that addressing gender equity issues is something that I have a lot to learn about, like, there's a lot I don't know, that I would like to learn. " (Ben)

Most of the Turkish student teachers said that gender issues in education were discussed as isolated topics in some courses such as Anthropology of Education and Educational Sociology. There were also student teachers who said they did not address gender issues in any of the courses within the teacher education program. Defne stated that the issue of discrimination was discussed in their classes, but it was not approached from a gender perspective: *"We talked about teachers' discrimination, but not about gender. We only discussed high and low achievers, and social status of students."* On the other hand, Merve mentioned that they discussed the social determinants of gender inequalities: "*We talked about issues related to equal treatment and equal opportunities in education. We discussed the social norms that form the basis of inequalities*."

Both Batu and Selin explained that they discussed the topics of gender and equity, but she did not gain insights into becoming gender sensitive or had practical ideas to implement in the classroom:

"We talked about gender in the Introduction to Education course. For example, we said that everyone should have an equal right to speak. But we did not talk about methods and techniques. I think I'm an egalitarian person but I don't have practical ideas that I can apply in class. " (Selin)

"We didn't discuss practical matters. The discussions remained at a theoretical level. Everyone knows that equality is necessary, but not everyone knows how to implement it in practice. We are a bit lacking in that aspect." (Batu)

Need for a Critical Lens of Gender

Student teachers believed that teacher education programs should assist them to further develop a broader and deeper understanding of gender sensitive pedagogy. They believed that genuine discussions about equity, social justice and diversity within teacher education programs were needed. Turkish student teachers thought there should be more room for gender issues in education in the teacher education program. As an example, Defne underlined the need for a gender course in the teacher education program, saying *"There should definitely be a gender course. It is an area of need. The course should cover inequalities and their causes. There are many false beliefs, they should be challenged to improve things."* According to her, teacher education programs should equip prospective teachers with the skills and tools to challenge gender norms in their future classrooms.

Both Nil and Kerem pointed to the critical role teachers play in challenging gender norms and they mentioned areas of need to become gender sensitive teachers. Kerem specifically acknowledged the role of teachers in raising parents' gender consciousness. He was motivated to learn strategies to gain parental cooperation in his efforts to address gender discrimination.

"It is proper to categorize them as ladies and gentlemen, girls and boys, we need to see them as equal partners. It is also very important to guide parents for the equal treatment of children. As a teacher candidate, I would like to learn how we can overcome the pressures of parents on children. How can we solve this social problem? I would like to learn how we can empower children by interacting with the family." (Kerem)

Nil criticized her teacher education program for failing to address gender issues in education, stating that she needed a more comprehensive and practice oriented education to challenge gender norms in her future classrooms.

"It is important to teach students that girls and boys are equal. For example, one should teach that men can also wear pink. In this sense, our lessons at the teacher education program are insufficient. We did not learn anything practical to be used in the classroom, especially about gender. If the department provided me with a more comprehensive education on gender, I would be a more effective teacher. Ideologically, I am an egalitarian person. However, I consider myself academically incapable when it is necessary to challenge gender stereotypes. " (Nil)

The present study showed that supporting gender equity among diverse populations is a challenge for many pre-service teachers. For instance, Ege emphasized the importance of becoming more aware of socio-cultural factors leading to gender

inequities in different communities, including the different social roles imposed on women and varying inequities experienced across different regions of Türkiye. He specifically shared his concerns about working in Eastern Türkiye, as he was not familiar with the socio-cultural structure and gender norms shaping the social relations in the region. He referred to gender disparities which are noticeably prevalent in rural areas and the Eastern provinces:

"For example, if they were to assign me as a teacher to the East, where new teachers are usually assigned anyway, I don't know the socio-economic status or culture of the people there. I don't know how they treat girls. I don't know the relationships between the students. They'll just send me there haphazardly. They probably just want me to collect my salary and sit there, since they're not providing any education. " (Ege)

American student teachers also pointed out the need for developing a critical understanding of gender issues through teacher education. Olivia asserted that it is necessary for the curriculum to incorporate a critical gender perspective so that student teachers can question the ways sexist norms shape teachers' gender beliefs.

"An understanding of gender and how stereotypes and social norms play into our decisions and play into society at large. And the systems that we interact with and are part of, I think, just a general awareness and understanding of how those things come into play is important. I think, just like the knowledge of being able to weave those ideas into just the general content that you're given, as part of a textbook, or part of a curriculum, you have to teach something that you have to develop on your own as part of your own ideas." (Olivia)

Similarly, Ben underlined the importance of improving student teachers' capacities to examine educational materials from a critical perspective for an equal representation of individuals with identity differences:

"I think one skill that's needed is just to be willing to go, to seek out things like history that aren't usually covered…. there's so many people of color and non-binary people who, you know, are doing great things being pioneers and revolutionaries, and I think those people deserve coverage in our schools and deserve to be studied." (Ben)

Kate, on the other hand, emphasized the importance of thinking beyond binary terms and being conscious of social privileges when perceiving gender issues in education from a critical perspective:

"Again, with the idea of things being on a spectrum. Where you were just knowing where you hold points of privilege and knowing where you hold points of oppression and knowing that you can hold both of them at the same time. It made me see gender issues just from a very different perspective." (Kate)

DISCUSSION

Rosa and Clavero (2022) argued that gender binary systems are now being challenged leading to the disruption of traditional gender patterns, yet gender norms placed on men and women continue to create gender-based inequities. According to Dahal et al. (2023), both patriarchal social structures and the ideology of male superiority disadvantage women in many areas of social life. In the present study, it was also revealed that in both countries, social norms, and the pervasive patriarchal socio-cultural framework collaboratively contribute to the perpetuation of cultural hegemony, reinforcing the prevailing narrative of male superiority. All of the teacher candidates interviewed for the present study defined gender equity by referring to their upbringing, social inequalities, and patriarchal social structures. Consistent with the prior research (Mercan Küçükakın & Engin Demir, 2022a; Aydagül, 2019). descriptions of Turkish student teachers revealed that traditional practices of Turkish patriarchy devalued women and limited their life choices in public and private spheres. Banks (2016) argued that although women's social status have improved in the USA since the civil rights movements of 1960s and 1970s, gender discrimination remains as a prominent educational and social problem. The present study showed that pre-service teachers in the United States also identified hierarchical gender relations within their communities, elucidating instances where parents exhibited a preference for boys over girls. It was revealed that subtle and unconscious manifestations of gender biases give rise to gendered hierarchies, even within families that identify as progressive. Based on these findings it can be argued gender inequities in education is a part of a bigger social problem which requires a more holistic and integrated approach analyzing complex relationships that exist between socio-cultural, economic and political systems in the society (Lynch & Baker, 2005).

As for the sexism in education, prior research has shown that educational practices work to reinforce male domination, and patriarchal socio-cultural structures work to create gender inequities in education (Dahal et al., 2023; Sayılan & Özkazanç, 2009). The gendered nature of the teacher's authority, different forms of pedagogical practices at different levels of education disadvantage females and reproduce gender norms in the society (Arnot, 2002). In the Turkish context, gender discrimination in the social realm is reinforced in schools through the structure of the curriculum and sexist practices of gender discrimination in classroom settings (Mercan Küçükakın & Engin Demir, 2022b). Studies conducted to examine the awareness of teacher candidates on gender in Türkiye found that teacher candidates hold gender stereotypic views (Aslan, 2015; Esen, 2013). Consistent with prior research, the present study pointed to the normalization of discriminatory educational practices, facilitated by stereotypical assumptions regarding students' abilities and talents. Interviews with Turkish student teachers showed how educational policies and practices perpetuate gender stereotypes concerning acceptable appearance and behavior. Participating American student teachers also provided examples of gender stereotyping in school settings. They criticized both implicit and explicit ways education

perpetuated gender norms. Based on their descriptions, we understood that teachers' implicit biases regarding identity differences continue to create sexist expectations, attitudes and classroom practices. More specifically, student teachers expressed inquiries about the underrepresentation of women in STEM fields and administrative positions. In a similar vein, Sadker and Zittleman (2016) pointed out male domination in the STEM fields in the USA. They reported that despite their increased enrollment in math and science, girls showed lower interest in pursuing a career in STEM (Sadker& Zittleman, 2016).

According to Rosa and Clavero (2022), higher education can play a significant role in empowering individuals and initiating societal transformation. With respect to gender equity, diversity, and inclusion, universities can serve as influential institutions that positively impact not only the realm of higher education but the society at large (Rosa & Clavero 2022). The present study also highlighted the role that universities' can play in providing a social environment where gender stereotypes can be challenged. The present study further revealed the nature and quality of teacher education, social mechanisms and relations within the teacher education programs in shaping the gender norms of prospective teachers in two different countries. The main difference between the two countries was that American student teachers perceived gender beyond the binary definitions and referred to multidimensional identities. American student teachers' interpretation of gender equity also reflected the intersectionality of race and gender. They pointed out the importance of appreciating difference, and the positive effects of racial and gender inclusivity. The interviews with Turkish student teachers pointed to sexist ideologies which subconsciously shape attitudes and behaviors of individuals. Integrating gender and gender issues into teacher education and identifying prospective teachers' needs with respect to equitable classroom practices is the first step in policy efforts aimed at improving the quality of education for all. The study, then, questioned the extent to which the teacher education program helped them gain gender awareness and sensitivity.

Participating student teachers acknowledged the importance of raising gender awareness through teacher education so that they can create a difference-friendly classroom environment. In line with the prior research (Smith, 2009; Sirota, 2019; Mayo, 2013; Grant & Zweir, 2011; Pennell 2017), the present study showed that gender issues in American education are addressed within a multidimensional conversation linking multicultural education to human rights, democracy, and social justice. Within this context, Tetreault (2016) argued that teachers need to recognize the complexities of identity formation, as an unfolding process, in order to create a safe and equitable classroom where all forms of difference are respected and normalized. Interviews with participating student teachers outlined the need for the inclusion of gender in the curriculum if the goal is to establish gender equitable classroom practices. Pollard (2016) noted that generalizations about gender and gender equity might be misleading and fail to address the experiences of girls from diverse populations. In order to appreciate the nuances of gender in multicultural societies, teachers need to go beyond simplistic notions of gender and reflect on the gender related experiences of students with different cultural backgrounds.

CONCLUSION AND RECOMMENDATIONS

The current study was able to analyze the ways in which pre-service teachers think about the interrelationships between gender, and education as an intersectional field of relations that have direct effects on their lives as teachers and as students. Educational practices continue to reinforce sexism, discrimination and patriarchal ideology whether it is intended or not. Participating student teachers explained the ways patriarchal norms shaped educational practices in complicated ways. Based on the related literature (Aslan, 2015; Lumadi & Shangwe, 2010; Lahelma, 2011; Sirota, 2019) and the findings of the present study, it can be concluded that increasing teachers' level of gender awareness is an issue of great importance for the effective implementation of gender equity, social justice and human rights policies. To ensure gender equity and to improve the social status of women, it is necessary to start with changing the mindset of the new generation of teachers, who have the potential to further change the patriarchal social structure with their progressivist ideas, thoughts and innovative practices. Gender equitable classroom practices can be constrained or derailed by contextual factors, political atmosphere and social norms. It is important to interrogate the sociocultural and political conditions that perpetuate institutional inequalities in teacher education programs. When addressing gender issues in education, teacher candidates should be provided with safe and supportive opportunities to question the social norms and cultural values that oppress women and assign them to a secondary social status. Without the ability to learn how to approach these social issues critically, a new teacher will not be able to create an egalitarian environment in their classroom.

The present study showed that gender was not an explicit element of teacher education programs in the USA or Türkiye. Considering the complexity of addressing differences through and within education, this analysis points to the critical role of teacher education in facilitating an intersectional and multicultural awareness of identity differences encompassing race, gender, religion and sexuality. As gender is intertwined with other aspects of social identities, teacher education programs need to address issues around gender, race, ethnicity, sexuality and culture in an integrated manner so that teachers can have a chance to reflect on their own biases and become more competent when confronting stereotypes and discrimination in their classrooms (Asher, 2007). While teacher education plays an important role in developing teacher agency, teacher agency can be expanded by forming new perceptions and subject positions through conflicting and resistant discourses. Creating this discursive space will create new possibilities for prospective teachers to construct new meanings and critical perceptions to challenge sexism in education. As Engebretson, (2016) wrote, an ability to identify gendered discourses that shape their subjectivities and those of their students

will empower student teachers to eliminate gender inequities. By linking their and their students' lives to gender discourses that circulate throughout the larger society, teachers can create a safe discursive space in their classrooms that can challenge the cultural hegemony of gender stereotyping and associated inequities (Engebretson, 2016).

The present study also showed that universities provided a dynamic place where different opinions, beliefs, culture, and traditions interact and campus culture can promote equity and diversity in many different ways. It points to the importance of changing gender, racial and cultural imbalances in the teaching profession through policies and practices that support equity within and through education (Heinz et al., 2021). Increasing the number of female faculty in administrative positions and enhancing the diversity at universities must continue to occur while further research works to deconstruct the limiting discourses that sustain stereotypical assumptions about male and female teachers and their students. In this sense, teacher education is uniquely positioned to better equip prospective teachers with the perspectives and tools to combat sexism and inequities in education.

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I/We hereby declare that the study has not unethical issues and that research and publication ethics have been observed carefully.

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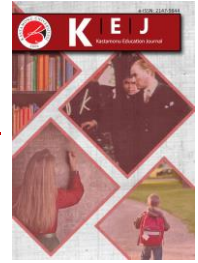
| Research Article / Araştırma Makalesi|

The Relationship Between Students' Digital Game Addiction and Their Attitudes and Habits Towards Reading

Öğrencilerin Dijital Oyun Bağımlılığı ile Okumaya Karşı Tutum ve Alışkanlıkları Arasındaki İlişki[1]

Şafak KAMAN[2], Aydın BULUT[3]

Abstract

Purpose: The aim is to determine the relationship between middle school students' levels of digital game addiction and their attitudes and habits towards reading.

Design/Methodology/Approach: The study used a correlational survey model. This model introduces a survey approach aimed at determining the co-variation between two or more variables. The sample group of the study consisted of 324 secondary school students enrolled in the educational year 2023-2024 in the Kaman district of Kırşehir province. Data were collected using the "Digital Game Addiction Scale" and the "Attitude and Habit Scale Towards Reading."

Findings: The collected data were analyzed using the SPSS 21 software package. Upon examining the findings of the study, it was determined that as students' digital game addiction increased, their attitudes and habits towards reading decreased. Conversely, as digital game addiction decreased, attitudes and habits towards reading increased. Additionally, it was observed that the levels of digital game addiction were higher in male students compared to female students.

Highlights: The findings of this study, along with the literature review, indicate that whether they are children or adolescents, if digital games are not played in a controlled manner, it can lead to addiction. A child who has acquired digital game addiction may reduce the time allocated to their studies, start avoiding social environments, and may not be able to develop certain skills that would make them academically successful. It is crucial, especially for parents, to control the duration and type of digital games their children play.

Öz

Çalışmanın amacı: Ortaokul öğrencilerinin dijital oyun bağımlılık düzeyleri ile okumaya karşı tutum ve alışkanlıkları arasındaki ilişkiyi belirlemektir.

Materyal ve Yöntem: Araştırmada ilişkisel tarama modeli kullanılmıştır. Bu model, iki veya daha fazla değişken arasındaki birlikte değişimi belirlemeyi amaçlayan bir tarama yaklaşımını ortaya koyar. Araştırmanın örneklem grubunu 2023-2024 eğitim öğretim yılında Kırşehir ili Kaman ilçesinde öğrenim görmekte olan 324 ortaokul öğrencisi oluşturmuştur. Veriler "Dijital Oyun Bağımlılığı Ölçeği" ve "Okumaya Karşı Tutum ve Alışkanlık Ölçeği" ile toplanmıştır.

Bulgular: Elde edilen veriler SPSS 21 paket program ile analiz edilmiştir. Araştırmanın bulguları incelendiğinde, orta düzeyde negatif korelasyon olduğu tespit edilmiştir. Ayrıca erkek öğrencilerin kız öğrencilere göre dijital oyun bağımlılık düzeylerinin yüksek olduğu görülmüştür.

Önemli Vurgular: Bu çalışmanın bulguları ile literatür taramasında karşımıza çıkan durum bizlere gösteriyor ki gerek çocuklar olsun gerekse gençler olsun dijital oyunlar kontrollü bir şekilde oynanmaz ise bağımlılık düzeyine çıkabilmektedir. Dijital oyun bağımlılığı edinmiş bir çocuğun derslerine ayıracağı zaman azalabilir, sosyalleşme yaşayacağı ortamlardan kaçınma başlayabilir ve akademik olarak kendisini başarılı kılacak birtakım becerilerini geliştiremeyebilir. Özellikle ebeveynler başta olmak üzere çocukların dijital oyun oynama sürelerini ve oynadıkları oyunların türünü kontrol altına almaları gerekmektedir.

INTRODUCTION

In today's rapidly advancing world of technology, we are constantly encountering new developments every day. While these advancements make their impact in areas such as education, health, transportation, and more, they also appear in devices that we can use in our daily lives. Playing games, which is one of the fundamental rights of children, also benefits from these developments. Devices suitable for gaming, capturing the interest of children and young people, are frequently used by them.

When examining the age range of individuals engaged in digital gaming, it is observed that it has a large spectrum, encompassing childhood, adolescence, young adulthood, and elderly stages ranging from three years old (Hazar &Hazar, 2019). The most significant factor influencing the preference for digital games across all age groups is the ease of accessibility. These games, compatible with appropriate technological devices, are readily playable in almost any environment and captivate players with their rich content. When the term addiction is mentioned, substance dependencies like alcohol, drugs, or cigarettes often come to mind. However, the advancement of technology and the evolution of human behavior have given rise to new types of addictions (Aksel, 2018). Digital game addiction in children can lead to negative physical consequences as well as various adverse impacts from a psychosocial perspective. This condition may not only bring about positive changes in a child's social skills but also result in behavioral disorders such as irritability, attention deficit, depression, anxiety disorders, anger, and more (Aslan, Başcıllar & Karataş, 2022). Physically, constant exposure to the digital environment can cause vision and hearing problems in children.

Digital games not only cause to the deterioration of children's social skills over time and but may also negatively impact academic performance. Additionally, the prolongation of gaming time can give rise to a significant problem, transforming into game addiction (Hazar & Hazar, 2019). While digital games are defined as games played online or offline through technological devices such as computers, tablets, and smartphones (Martinez-Garza, Clark, Killingsworth & Adams, 2016), digital game addiction is defined as a factor that affects the daily life of the individual and a process which is continued by an individual persisting in excessive gaming desires by pushing their body and mind. (Weinstein, 2010). Both social and physical skills of a child who has digital game addiction are affected negatively. This situation can also lead to a decline in academic success by impacting school life.

Individuals feel need to engage in reading at various levels for the continuity of social life (Alvermann, 2002). Engaging in reading at different levels can have positive effects on personal development, social awareness, academic achievements, and professional success. The role of attitude is crucial in developing reading skills (Özdil & Demir, 2020). It is well known that success in reading skills is closely related to the attitude towards reading (Balcı, 2013). Attitude is a persistent system that enables an individual to make a positive or negative evaluation, including feelings and thoughts toward an object, idea, or person, and as well as behavioral tendencies (Deniz & Tuna, 2006). To encourage individuals to develop a positive attitude toward reading books and turn this attitude into action, various stimuli and interactions are needed to motivate individuals and create a positive perception of reading books in their minds. It is essential to reinforce the positive attitude and make it a habit for individuals who have formed a positive perception mentally, thereby ensuring the continuity of the behavior of reading books (Özdil & Demir, 2020). It is expected that children and young people will develop a positive attitude towards reading and acquire the habit for their academic achievements and personal development.

Digital game addiction is increasingly gaining importance over time and since it has become a serious issue, increase in studies conducted are observed (Bhagat, Jeong & Kim, 2020). In a study conducted by Evcin (2010), it was found that playing violent computer games by secondary school students led to an increase in anger, physical, verbal, and indirect aggression. Köse (2013), in his study, investigated the habits of middle school students in playing computer games and their socialization status. According to the research results, it was found that computer games positively or negatively affect the family, school, and friendship relationships, as well as the socialization of middle school students. When different studies are examined, it seems to be researched that interests of middle school students in violent computer games (Kıran, 2011), the relationship between internet addiction and digital game addiction (Ayas, 2012), determination of aggression tendencies and self-esteem levels in children who prefer violent games in computer games (Ergür, 2015), relationships between digital game addiction, bullying cognitions, and empathy levels in adolescents (Kılıç, 2019), and examination of the relationship between digital game addiction and sleep quality in adolescents (Tuncay & Göger, 2021). Additionally, in a study conducted by Kars (2010), it was concluded that the increase in the duration of playing computer games is associated with an increase in aggressive behaviors. In the study by Koçak and Köse (2014), it was observed that teenagers playing computer games negatively affected their family, school, and friendship relationships, disrupting the social development process.

It has been observed that there is no research in the literature examining the relationship between the reading attitudes and reading habits of children playing digital games. In this context, this study aims to explore the relationship between middle school students' digital game addiction and their attitudes and habits towards reading, to contribute to addressing the identified gap in the relevant literature.

The primary aim of this research is to determine the relationship between digital game addiction levels of middle school students and their attitudes and habits towards reading. In line with this objective, the following questions have been addressed:

1. Is there a significant relationship between middle school students' scores on the Digital Game Addiction Scale and their scores on the Attitudes and Habits towards Reading Scale?

2. Is there a significant difference in middle school students' scores on the Digital Game Addiction Scale based on gender?

3. Is there a significant difference in middle school students' scores on theDigital Game Addiction Scale based on grade level?

4. Do middle school students' scores on the Attitudes and Habits towards Reading Scale show significant differences based on gender?

5. Do middle school students' scores on the Attitudes and Habits towards Reading Scale show significant differences based on grade level?

METHOD

Research Model

The research employed a correlational survey model. This model establishes a scanning approach aiming to determine the co-variation between two or more variables. The correlational survey model is utilized to identify the existence of co-variation among variables and to determine the nature of these variations. In this model, analyses are conducted by focusing on whether variables co-vary and, if so, the nature of this co-variation (Büyüköztürk, 2013; Karasar, 2020).

Sample Group of the Study

The sample group of the study consists of secondary school students studying in Kaman district of Kırşehir province in the 2023-2024 academic year. Simple random sampling method was used in this study. The sample was selected from a total of 324 students attending three secondary schools affiliated to the Ministry of National Education in Kaman district. The details of the sample group for the research are provided in Table 1.

Table 1. Descriptive Data for the Sample Group

Class Grade	Female		Male		Total	
	N	%	N	%	N	%
5. Grade	30	40	45	60	75	23,1
6. Grade	36	55,3	29	44,7	65	20,1
7. Grade	43	51,8	40	48,2	83	25,6
8. Grade	44	43,6	57	56,4	101	31,2
Total	153	47,2	171	53,8	324	100

When examining the data in Table 1, it is observed that 47.2% of the sample group consists of female students, while 53.8% consists of male students. Looking at the distribution by class, 23.1% of the sample group are 5th graders, 20.1% are 6th graders, 25.6% are 7th graders, and 31.2% are 8th graders.

Data collection tools

The research data were collected using two scales: the "Digital Game Addiction Scale for Children" developed by Hazar and Hazar (2017) and the "Attitudes and Habits towards Reading Scale" developed by Özdil and Demir (2020).

The Digital Game Addiction Scale for Children was developed by Hazar and Hazar in 2017 with the participation of middle school students to determine the levels of digital game addiction in children. The scale, consisting of a total of 24 items, has a four-factor structure. It is a 5-point Likert scale with response options formulated as "Strongly Disagree (1)," "Disagree (2)," "Undecided (3)," "Agree (4)," "Strongly Agree (5)." Students responding to the scale items will make an assessment by assigning a value between 1 and 5 and marking the appropriate option. The minimum score that can be obtained from the scale is 24, while the maximum score is 120. In the scale's rating system, groups are evaluated as follows: normal (1-24), low risk (25-48), risky (49-72), addicted (73-96), highly addicted (97-120)

The Attitudes and Habits towards Reading Scale was developed by Özdil and Demir in 2020 with the participation of middle school students to assess children's attitudes and habits towards reading. The scale consists of 19 items and has two sub-factors. It is a 5-point Likert scale with response options formulated as "Strongly Disagree (1)," "Disagree (2)," "Undecided (3)," "Agree (4)," "Strongly Agree (5)." Students responding to the scale items will assess and mark the appropriate value between 1 and 5. The interpretation of the averages for the scale is as follows: always (4.21-5.00), often (3.41-4.20), sometimes (2.61-3.40), rarely (1.81-2.60), and never (1.00-1.80), considering average values ranging from 1.00 to 5.00.

Data Collection Process

Data were collected from 324 students using the Digital Game Addiction Scale and the Attitudes and Habits Towards Reading Scale. In this study, in which the relationship between digital game addiction and attitudes and habits towards reading of secondary school students was examined, the data were collected face-to-face by the researchers from three different schools in Kaman district of Kırşehir province in the fall semester of the 2023-2024 academic year.. Necessary explanations were made to the students by the researchers and the scales given to them were filled in voluntarily. The Ethics Committee Report related to

the research was obtained from Kastamonu University. During the data collection process, the researchers conducted face-to-face interviews with the students and the application was carried out on a voluntary basis.

Data analysis

The collected data were then transferred to the SPSS 21 software package for analysis. SPSS 21 software was used for data analysis. The minimum and maximum scores that could be obtained from both scales were determined as 1 and 5, respectively. Initially, skewness and kurtosis values of the obtained data were examined to determine whether the data showed normal distribution. Skewness and kurtosis coefficient values between -1 and +1 indicate that the scores have a normal distribution.

Table 2. Normality Test Data Regarding Students' Digital Game Addiction Scale Scores and Attitude Towards Reading Scale Scores

Norms	N	Minimum	Maximum	Average	SS	Skewness	Kurtosis
Digital game addiction scale scores	324	1	5	2,11	,82	-,91	,13
Attitudes and habits scale scores	324	1	5	3,51	,64	-,11	,30

When Table 2 is examined, it is observed that the skewness and kurtosis coefficient values for the digital game addiction scale scores are between -1 and +1. Similarly, the skewness and kurtosis values for the attitudes and habits towards reading scale scores are found to be between -1 and +1. The analysis results indicate that the scores of students on the digital game addiction scale and the attitudes and habits towards reading scale show a normal distribution. Therefore, independent samples t-test was applied to determine the relationship between gender variables in the analysis of the data. One Way ANOVA was used to reveal the relationship between the scores and the class variable. In addition, Pearson Product-Moment Correlation was used to determine the relationship between students' digital game addiction and attitudes and habits towards reading scores. Furthermore, descriptive statistics such as frequency, percentage, and mean scores were utilized for data description.

FINDINGS AND INTERPRETATIONS

In the research, initially, the correlation between middle school students' scores on the Digital Game Addiction Scale and scores on the Attitudes and Habits towards Reading Scale was examined, and the findings obtained are presented in the table below.

Table 3. Correlation between Digital Game Addiction and Attitudes and Habits towards Reading

Variable	N	r	p
DOB (digital game addiction)	324	-,532	,00
OYTA (attitudes and habits towards reading)			

p<.01

According to the data in the table, a statistically significant negative correlation at a moderate level has been found between middle school students' scores on the Digital Game Addiction Scale and scores on the Attitudes and Habits towards Reading Scale (r=-.532; p<.01). This finding indicates an inverse relationship between middle school students' digital game addiction and their attitudes and habits towards reading. In other words, as students' game addiction increases, their attitudes and habits towards reading decrease; as digital game addiction decreases, attitudes and habits towards reading increase.

Table 4. T-test Results of Digital Game Addiction Scale Scores by Gender

Cinsiyet	N	X	S	sd	t	p
Erkek	171	55,58	20,25	322	4,759	,00
Kız	153	45,47	17,68			

p<.01

According to the data in the table, there is a significant difference in middle school students' scores on the Digital Game Addiction Scale based on gender, t(322) = 4.759, p < .01. This finding indicates that the digital game addictions of male and female students significantly differ. It has been observed that male students have higher levels of digital game addiction (M = 55.58) compared to female students (M = 45.47).

Table 5. Descriptive Statistics of Digital Game Addiction Scale Scores

Sınıf Düzeyi	N	X	SS
5. Sınıf	75	47,33	19,00
6.Sınıf	65	49,75	18,85
7.Sınıf	83	54,31	20,80
8.Sınıf	101	51,19	19,63

The analysis results indicate that there is no significant difference in middle school students' digital game addiction scores based on grade level, $F(3,320) = 1.738$, $p > .05$. In other words, it is observed that middle school students' digital game addictions are similar across different grade levels.

Table 6. ANOVA Results of Digital Game Addiction Scale Scores According to Class Level

Source of the varience	Total sum of squares	sd	Average of squares	F	p
Between group	2012,892	3	670,964	1,738	,159
Within group	123510,6	320	385,971		
Total	125523,5	323			

Even though there is no significant differentiation, considering the averages at the grade level, it has been determined that the game addiction scores of fifth-grade students (X=47.33) are the least, and the game addiction scores of seventh-grade students are the highest (X=54.31). Again, looking at the average scores, it is noteworthy that there is an increase in game addiction scores for middle school students from the fifth grade to the eighth grade, and in the eighth grade, this trend decreases.

Table 7. T-test Results of Attitudes Towards Reading and Habit Scale Scores According to Gender

Gender	N	X	S	sd	t	p
Male	171	64,75	11,67	322	3,242	,00
Female	153	69,12	12,58			

p<.01

According to the data in the table, there is a significant difference in the reading attitude and habit scale scores of middle school students by gender, $t(322) = 3.242$, $p < .01$. This finding indicates that the reading attitudes and habits of male and female students differ significantly. It has been found that female students' reading attitudes and habits (X=69.12) are higher than those of male students (X=64.75).

Table 8. Descriptive Statistics of Attitude Towards Reading and Habit Scale Scores

Class Grade	N	X	SS
5. Grade	75	72,57	11,63
6. Grade	65	68,87	10,66
7. Grade	83	64,53	10,39
8. Grade	101	63,09	13,43

The analysis results indicate that the reading attitude and habit levels of middle school students show a significant difference according to the grade level, $F(3,320) = 11.082$, $p < .05$. In other words, it is observed that the reading attitude and habit levels of middle school students do not have similar characteristics across grade levels. A significant difference has been identified between fifth-grade students and seventh and eighth-grade students.

Table 9. ANOVA Results of Attitude Towards Reading and Habit Scale Scores According to Grade Level

Souce of varience	Total sum of squares	sd	Average of squares	F	Significant difference
Between groups	4591,210	3	1530,403	11,082	5.grade - 7.grade
Within group	44193,047	320	138,103		5.grade - 8.grade
Total	48784,256	323			

Considering the average scores based on the grade level, it is observed that fifth-grade students have the highest reading attitudes and habits (X=72.57), while eighth-grade students have the lowest reading attitudes and habits (X=63.09). Again, looking

at the average scores, it is noteworthy that there is a decrease in middle school students' reading attitudes and habits from the fifth grade to the eighth grade.

CONCLUSION, DISCUSSION AND SUGGESTIONS

The relationship between middle school students' digital game addiction and reading attitudes and habits was examined in the research. When the findings of the study were examined, it was determined that as students' digital game addictions increased, their attitudes and habits towards reading decreased; conversely, as digital game addiction decreased, attitudes and habits towards reading increased. There are studies in the relevant literature supporting the research results. In a study conducted by Şahin, Demir, Kümüş, and Kepenek (2022), who examined computer game addiction and reading attitudes of fourth-grade primary school students, it was revealed that the levels of game addiction in male students were higher than those of female students, and their reading attitude levels were lower. Additionally, different research findings have indicated that male students show more interest in and spend more time playing digital games compared to female students (Erboy and Akar Vural, 2010; Çavuş, Ayhan, and Tuncer, 2016; Horzum, 2011; Gökçearslan and Durakoğlu, 2014; Öndeş and Kılıç, 2022). These results also qualitatively support our research findings. Digital game preferences can often be based on individual interests, gender norms, and marketing strategies. Boys generally show more interest in technological and competitive games. This situation can be effective in directing boys towards digital games along with gender norms and expectations. Additionally, marketing strategies that often focus on boys in the gaming industry can reinforce this preference.

In another finding of the study, although there was no significant difference in middle school students' digital game addiction levels according to their grade level, considering the averages at each grade level, it was determined that the fifth-grade students had the lowest game addiction levels (X=47.33), while the seventh-grade students had the highest (X=54.31). Looking at the average scores, there is an increase in game addiction scores from the fifth grade to the eighth grade among middle school students, and a decrease is observed in the eighth grade. This situation can be interpreted as a result of the eighth-grade students' decreased interest in games due to their awareness of preparing for high school entrance exams and the strict supervision of teachers and parents. It is known that students tend to distance themselves from certain activities to succeed in high school entrance exams. There is a reduction in playing games and leisure time, and they spend a significant portion of their time preparing for the exams.

Another finding of the study is that there is a significant difference in middle school students' attitudes and habits toward reading based on gender. It was found that female students have higher attitudes and habits toward reading compared to male students. This can be interpreted as female students having a greater liking for reading and a higher desire for reading. Additionally, there are studies in the literature supporting this research finding (Başaran and Ateş, 2009; Gürer, 2013; Hood, 2015; Ürün Karahan, 2015; Yıldız and Kaman, 2016). When looking at the analysis results at the grade level, it is observed that attitudes and habits toward reading are quite high at the 5th-grade level, and as the grade level increases, these attitudes and habits decrease. This finding may suggest that as children get older, there is a decline in the attitudes they develop toward reading and habits.

The findings of this study, along with the literature review, indicate that whether it be children or adolescents, if digital games are not played in a controlled manner, it can lead to addiction. A child with digital game addiction may reduce the time devoted to their studies, start avoiding social environments, and may not develop certain skills that would make them academically successful. It is crucial, especially for parents, to control the duration and types of digital games their children play. This regulation, initiated at home, should also be supported by the school. It would be beneficial for school administrators and teachers to be conscious of this issue. Organizing seminars within the school to make students aware of digital games can contribute positively. Parents should be involved in this process, and the entire process should be managed collaboratively.

Ethics Committee Approval Information

Ethics committee approval was obtained from Kastamonu University Scientific Research and Publication Board with the approval number 14/44 on 7 December 2023.

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| Research Article / Araştırma Makalesi|
Investigation of Prospective Teachers' 21st Century Skills Competency Perceptions Based on Various Variables

Öğretmen Adaylarinin 21. Yüzyil Becerileri Yeterlik Algilarinin Çeşitli Değişkenlere Göre Incelenmesi[1]

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Abstract

Purpose: The purpose of this study is to assess the self-perceived competency of prospective teachers regarding 21st century skills. The study seeks to understand how prospective teachers perceive themselves in terms of the skills they will need to teach and thrive in the rapidly evolving educational landscape that is shaped by globalization and technological advancements.
Design/Methodology/Approach: This study utilizes a quantitative method with a descriptive survey model to assess the competency perceptions of 341 prospective teachers' 21st century skills from a Turkish state university, using random sampling for representativeness. The "21st Century Skills Competency Perception Scale for Teacher Candidates" was employed to collect data, exhibiting high reliability (Cronbach Alpha of 0.98), and data analysis included descriptive statistics, T-tests, and ANOVA to explore differences in skills perception, with the scale's validity and reliability confirmed for the sample group.
Findings: The findings indicate that prospective teachers rate their competency in 21st century skills highly, with the greatest confidence in Information, Media, and Technology Skills and the least in Learning and Innovation Skills. Significant gender differences were found, with female candidates reporting higher competency perceptions than males. Age also influenced competency perceptions, with older groups (25-31 and 32+) rating their skills higher than the youngest group (18-24). Furthermore, pedagogic formation graduates rated their competencies higher than their peers from other faculties, indicating that educational advancement correlates with higher self-perceived 21st century skills.
Highlights: The research suggests that teacher education programs should focus on strategic development of learning and innovation skills and integration of technology into teaching, with findings indicating that perceptions of competency increase with age and are higher among females and graduates.

Öz

Çalışmanın amacı: Bu çalışmanın amacı öğretmen adaylarının 21. yüzyıl becerilerine ilişkin öz yeterlik algılarını değerlendirmektir. Çalışma, küreselleşme ve teknolojik gelişmelerin şekillendirdiği hızla gelişen eğitim ortamında öğretmen adaylarının öğretmek ve gelişmek için ihtiyaç duydukları beceriler açısından kendilerini nasıl algıladıklarını anlamayı amaçlamaktadır.

Materyal ve Yöntem: Bu çalışma, basit seçkisiz örnekleme yönetimi kullanarak, Türkiye'de bir devlet üniversitesinden 341 öğretmen adayının 21. yüzyıl becerileri yeterlik algılarını değerlendirmek için betimsel tarama modeli kullanan nicel bir araştırmadır. Veri toplamak için yüksek güvenilirlik sergileyen (Cronbach Alpha 0,98) "Öğretmen Adayları için 21. Yüzyıl Beceri Yeterlilik Algısı Ölçeği" kullanıldı ve öğretmen adaylarının yeterlik algısındaki farklılıkları ortaya koymak için betimleyici istatistikler, T testleri ve ANOVA yapıldı. Ölçeğin örneklem grubu için geçerliliği ve güvenirliği doğrulanmıştır.

Bulgular: Bulgular, öğretmen adaylarının 21. yüzyıl becerilerindeki yeterliliklerini yüksek düzeyde değerlendirdiklerini, en fazla güvenin Bilgi, Medya ve Teknoloji Becerileri boyutunda, en düşük ise Öğrenme ve Yenilik Becerileri boyutunda olduğunu göstermektedir. Kadın adayların erkeklere göre daha yüksek yeterlilik algısı bildirdiği önemli cinsiyet farklılıkları bulunmuştur. Yaş da yeterlilik algılarının belirleyiciler arasında yer almıştır; daha ileri yaştaki gruplar (25-31 ve 32+) becerilerini en genç gruptan (18-24) daha yüksek puanlamışlardır. Ayrıca, pedagojik formasyon mezunları kendi yeterliliklerini diğer fakültelerdeki akranlarından daha yüksek puanlamışlardır.

Önemli Vurgular: Araştırma, öğretmen eğitimi programlarının, öğrenme ve yenilik becerilerinin stratejik gelişimine ve teknolojinin öğretime entegrasyonuna odaklanması gerektiğini öne sürerken bulgular, yeterlilik algılarının yaşla birlikte arttığını ve kadınlar ve mezunlar arasında daha yüksek olduğunu göstermektedir.

INTRODUCTION

With the rapid development of Information and Communication Technologies (ICT), the process of globalization in the 21st century forces the way of living, working and learning into a process of constant change. Levy and Murnane (2004) argue that due to the rapid development of ICT, a significant part of many jobs is no longer just about "information exchange" but also about "information perspective". According to Anderson (2008), the society in which information functions is now referred to as the "information society". The dynamic changes demanded by the information society also create significant challenges for education systems. All these developments necessitate a greater focus on identifying and acquiring the competencies individuals need to actively and effectively participate in the information society (Ananiadou & Claro, 2009).

These competencies, called 21st century competencies or 21st century skills, are generally associated with high-level skills and behaviors that represent the ability to cope with multidimensional and complex problems and unpredictable situations (Westera, 2001). Dede (2010) refers to the "higher-level skills and learning tendencies" that individuals must develop in order to be successful in the information age, which emerged by blending the concepts of both knowledge and skill, as 21st century skills. Hixson et al. (2012) discuss 21st century skills under the headings of "critical thinking, collaboration, creativity and innovation, communication, self-direction, establishing global and local connections and using technology as a learning tool". Anagün et al. (2016) also stated that 21st century skills center on "accessing and using information, respecting different cultures and living together with different cultures". They emphasize that individuals with 21st century skills will lead a more qualified life, can easily overcome the problems they encounter, and can be successful by correctly evaluating the situations in their working and social lives.

The 21st century skills, which the individuals of the 21st century information society should possess, have been categorized in different ways by different institutions and organizations. The standards set by the International Society for Technology in Education (ISTE) provide a comprehensive road map for the effective use of technology in schools around the world, providing competencies for "learning, teaching and leading" in the digital age. ISTE Standards emphasize that using technology for learning enables all students to learn in an "effective, sustainable, and equitable" way. The standards have been adopted in all 50 US states and in many countries around the world. Additionally, the standards are compatible with UNESCO's Sustainable Development Goals.

ISTE lists student standards as "competent learner, digital citizen, information organizer, innovative designer, computational thinker, creative communicator and global collaborator" and educator standards as "learner, leader, citizen, collaborator, designer, facilitator and analyst" (ISTE, 2023). Assessment and Teaching of 21st Century Skills/ATC21S is a research and development project initiated by three major technology companies, Cisco, Intel and Microsoft, that seeks new ways to help students internalize and take their skills further in the 21st century (Griffin et al., 2012). The Organization for Economic Cooperation and Development/OECD launched the "Definition and Selection of Competencies (DeSeCo) Project" in late 1997 to provide a solid conceptual framework that will inform the definition of core competencies and strengthen international research. DeSeCo Project's conceptual framework for core competencies consists of three broad categories: "using tools interactively, interacting with heterogeneous groups, and acting independently" (OECD, 2005, p. 5). Asia Society Partnership for Global Learning aims at shaping shared futures for Asia and the world in the fields of politics, arts and culture, education, sustainability, business and technology. On the other hand, the Asia Society is a global education center that shares a common vision, encouraging participation, informing and educating new target audiences, and helping provide real solutions for the benefit of everyone (Asia Society, 2023). Another organization, The North Central Regional Educational Laboratory/NCREL (2021), is a nonprofit organization dedicated to helping schools and the students they serve reach their full potential. As experts in the educational applications of technology, NCREL's ultimate goal is to create safe and productive schools where all students can develop their skills and abilities (NCREL, 2021). While the European Union (EU) declared 1996 as the "Year of Lifelong Learning", 21st century skills and competencies have become more functional, especially in the field of education.

"The skills and competencies that individuals may need for lifelong learning" were determined by the European Parliament and the European Council in 2006 under the title "Key Competences for Lifelong Learning - A European Reference Framework". The Framework of Reference sets out eight core competencies: "communication in the mother tongue, communication in foreign languages, mathematical competence and key competences in science and technology, digital competence, learning to learn, social and civic competences, initiative and entrepreneurship, cultural awareness and expression" (European Union, 2006). Apart from these, the widely used reference in the literature is The Partnership for 21st Century Skills (P21). P21 is the result of a collaboration between educators and businesses to operationalize 21st century learning. The framework is used all over the world, especially in America (P21, 2019). The P21 framework includes "a set of skills, knowledge, and expertise that learners must acquire in order to be successful in both life and work" (P21, 2019; Voogt & Roblin, 2012). P21 (2009) categorizes 21st century skills as "a) learning and renewal skills, b) life and career skills and c) information, media and technology skills".

Life and career skills are classified as "flexibility and adaptability", "initiative and self-management", "social and intercultural", "leadership and responsibility" skills. Information, media and technology skills consist of "information literacy", "media literacy" and "ICT (information, communication and technology) literacy" skills. Learning and renewal skills include "critical thinking and problem solving", "communication and cooperation", "creativity and renewal" skills. Apart from the three main categories in the P21 learning framework, there are also "core subjects and 21st century themes and interdisciplinary subjects". While the core subjects are classified as "English, reading and language arts, world languages, art, mathematics, economics, science, geography,

history and civics", interdisciplinary subjects are classified as "global awareness, finance-economics-business and entrepreneurship literacy, civic literacy, health literacy, environmental literacy".

Although these classifications vary, it is seen that 21st century skills have a common denominator as "creativity, communication, collaboration, critical thinking, information and communication technologies literacy, social and cultural competencies" (Voogt & Roblin, 2012). When all classifications are taken into account these skills and competencies, called 21st century skills, are quite different from those needed in the 20th century (Dede, 2010). In order for these skills to become functional, it is an important necessity for all stakeholders in the learning-teaching process to be equipped with these skills. Wagner (2008) states that what potential employers want in young people today is "critical thinking, creativity and effective communication etc.". It is stated that there is a significant disconnect between the skills needed and the "passive learning environments and test-centered lesson plans focused on gaining rewards" offered by our schools. At the same time, Wagner (2008) emphasizes the importance of educating learners to meet the demands of the 21st century and cope with the problems brought by the age, and also draws attention to the need for competent teachers to teach skills suitable for the new century.

Chai et al. (2020) state that it is important for teachers to have a higher level of knowledge and skills than in the past in line with globalization, and that they need additional teaching scaffolds. In addition, equipping educators with 21st century skills will improve students' knowledge and skills, which are very important for their career prospects in the future. Ananiadou and Claro (2009) emphasize that schools aiming at developing the 21st century skills should respond to the social and economic needs of the society and that education also needs a significant reform. Silva (2009) states that all levels of education, starting from primary school, are important for learners to develop 21st century skills, and that providing students with skills such as decision-making, independent thinking, problem solving, critical thinking, especially from the primary school level, will create solid foundations. While Melvin (2011) emphasizes the importance of skills such as organizing environments, applying the reflective teaching model, arranging personal space and materials, being a model as a leader, cooperating with parents, doing practices between classes and creating a culture of citizenship for change in the 21st century, he points out that it is not clear to what extent they use these skills in education.

In Türkiye, within the scope of the Turkish Qualifications Framework (TQF), all education and training programs and all qualifications gained through other learning methods are designed as a single integrated structure. TQF also includes qualifications for which the Ministry of National Education (MoNE) is responsible, qualifications under the responsibility of the Vocational Qualifications Authority (2015), higher education qualifications offered under the coordination and supervision of the Council of Higher Education and the qualifications of other responsible institutions. In addition, there is an approach in TQF based on "creating an environment where learners can obtain any qualification through different ways". Within TQF, key competencies are included among the learning outcomes of most qualifications. Key competencies are stated as eight competencies: " a) communication in the mother tongue, b) communication in foreign languages, c) mathematical competence and basic competencies in science/technology, d) digital competence, e) learning to learn, f) social and civic competencies, g) taking initiative and entrepreneurship, h) cultural awareness and expression". Interrelated key competencies emphasize "critical thinking, creativity, initiative, problem solving, risk assessment, decision making and constructive management of emotions." In education policies of Türkiye, it is aimed to mostly provide key competencies (Turkish Competencies Framework, 2015).

Teacher candidates must possess a diverse set of 21st-century skills to effectively prepare students for the complexities of the modern world. Research highlights the critical importance of these skills, which include critical thinking, creativity, collaboration, and communication (Pellegrino & Hilton, 2012; Trilling & Fadel, 2009; Wagner, 2008). Ağaoğlu and Demir (2020) emphasize that integrating these skills into teacher education programs enhances candidates' readiness to implement innovative teaching strategies. Additionally, studies by Anagün et al. (2016) and Bedir (2019) suggest that teacher candidates who are well-versed in digital literacy and technological integration are better equipped to foster a dynamic and interactive learning environment. Future educators apply modern learning skills and teaching skills and examines the correlation between their proficiency in these two areas. This relationship is crucial for understanding how well teacher candidates are prepared to both learn and teach using contemporary educational practices and technologies (Orhan-Göksün & Kurt, 2017). Furthermore, Conklin (2012) and Dede (2010) argue that promoting problem-solving and adaptability within teacher training programs is essential for addressing diverse classroom challenges. According to OECD (2019) and P21 (2019), these competencies are pivotal for nurturing students who can thrive in a globalized economy. Consequently, teacher education must evolve to encompass these essential 21st-century skills, ensuring that future educators are prepared to meet the demands of contemporary education (Çınar, 2019; Erten, 2020; Gelen, 2017). Engin and Korucuk (2021) further highlight that understanding the various factors influencing 21st-century skills is crucial for developing effective teaching strategies tailored to diverse student needs. Additionally, the evaluation of the FATİH project indicates that integrating technology in education significantly enhances the development of these crucial skills among students (Eryılmaz & Uluyol, 2015). Miller (2009) also underscores the value of personal learning networks in fostering these skills, demonstrating how personalized, networked learning environments can enhance student engagement and competence. Yeni (2018) further notes that 21st-century skills education positively influences teachers' perceptions of their competence in educational technology and material development.

21st century skills are also very important for teacher candidates in terms of their ability to adapt to today's rapidly changing and developing world. At the same time, the greatest responsibility in providing school-age individuals with 21st century skills falls on teachers, and therefore the competencies of teacher candidates are expected to be increased (Tekerek et al., 2018). These skills will enable teacher candidates not only to convey knowledge to their students, but also to prepare their students for lifelong learning journeys. Some important 21st century skills for teacher candidates can be listed as follows (P21, 2015; UNESCO, 2016):

a) Communication skills: Teacher candidates must be able to communicate effectively with their students, parents and colleagues. For this, they must possess written, verbal and visual communication skills.

b) Use of technology: Teacher candidates should be able to effectively use technology, which is the indispensable tool of our age. In this way, they can teach their students more effectively and efficiently.

c) Critical thinking: Teacher candidates must also have this skill in order to provide their students with critical thinking skills. These skills improve students' "problem solving and decision making" skills.

d) Cooperation: Teacher candidates must also have this skill in order to provide their students with the skill of cooperation. Collaboration improves students' social and emotional skills.

e) Creativity: Teacher candidates need to be creative themselves in order to provide their students with creative thinking skills. Creativity makes students' learning process more fun and interesting.

Recognizing the pivotal role of these essential skills, this study seeks to investigate the level of competency perceptions of prospective teachers regarding 21st-century skills. Specifically, this research aims to answer the following questions:

1. What is the level of competency perceptions of prospective teachers regarding 21st century skills?
2. Do teacher candidates' 21st century skills competency perceptions differ significantly based on the following variables?
    a) Age
    b) Gender
    c) Educational Status

METHOD

Research Model

This research uses a quantitative method with descriptive survey model. This type of survey involves studying large groups to understand their opinions and attitudes about a particular event or phenomenon, aiming at describing these phonemena and events (Karakaya, 2012).

Population and Sample

The population of the research consists of graduate and undergraduate students. The sample of the research consists of 345 prospective teachers studying at Manisa Celal Bayar University in Türkiye in the 2022-2023 academic year. The sampling is determined using the simple random sampling method. Simple random sampling method is the method in which units are sampled, giving each sample selection an equal probability of being selected. This sampling method offers all units in the universe an equal and independent probability of being selected for the sample and is seen as the valid and best way to select a representative sample (Büyüköztürk et al., 2013). For this purpose, we have reached the prospective teachers at all related faculties of a state university and have taken the volunteer participants into the sample.

Data was collected online from the selected prospective teachers. The number of data analyzed in the research was 341. Demographic information about 341 teacher candidates was as follows:

a. *Gender*: Female prospective teachers constitute 86.8% of the total, while male teacher candidates constitute 13.2%. This distribution shows that the majority of the examined group consists of women.
b. *Age*: Prospective teachers aged 31 and over constitute 31.9% of the total, aged 25-30 constitute 20.2% of the total, and aged 18-24 constitute 47.8% of the total.
c. *Educational Status*: 44.2% of prospective teachers are in the graduate group receiving pedagogic formation education, 28.7% are undergraduate students who are continuing their formation education. On the other hand, 6.4% are undergraduate students of the faculty of education. 18.4% of the participants are undergraduate teacher candidates at the faculty of theology and 2% are undergraduate students at the faculty of sports sciences.

Data Collection Tool and Data Collection

In the study, the "21st Century Skills Competences Scale Directed at Teacher Candidates" developed by Anagün et al. (2017) was used to collect data. Necessary permissions for the scale were obtained from the authors. The scale has a three-dimensional

factor structure consisting of 42 items (a) Learning and Renewal Skills, b) Life and Career Skills, c) Information, Media and Technology Skills. To determine the reliability of the scale, the Cronbach's alpha internal consistency coefficient, the Spearman-Brown value, and the Guttman Split-Half value were examined. The reliability analyses indicated that the Cronbach's alpha value for the entire scale was 0.889, the Spearman-Brown value was 0.731, and the Guttman Split-Half value was also 0.731. When examining the Cronbach's alpha coefficients for each factor, the values were calculated as 0.845 for Factor 1, 0.826 for Factor 2, and 0.810 for Factor 3. The scale has a 5-point Likert rating, the minimum score obtained from the scale is 42 and the maximum score is 210. The reliability coefficient (Cronbach Alpha) of the scale obtained from this research is 0.98.

In order to collect data, necessary ethical permissions were first obtained from Manisa Celal Bayar University Ethics Committee. Afterwards, the data collection process was started with the survey form created via Google forms. Data collection from volunteer prospective teachers was carried out over a period of approximately one month.

Validity and Reliability

Since our sample characteristics did not differ significantly from the parameters of the original study, it was assumed that the original validity of the scale was maintained. Before conducting T-test and ANOVA analyzes to investigate differences between the mean score of groups, necessary preliminary analyzes were carried out, including normality and homogeneity of variance, and all assumptions regarding these tests were met. Since the results showed significant differences where expected, the assumption that the scale had discriminant validity was also met in the context of our study.

Analysis of Data

In the analysis of differences among demographic variables, several threshold values were used to ensure the robustness and significance of the results. Descriptive statistics were first calculated, including means and standard deviations, to summarize the data. Descriptive statistics were used to determine the perceptions of the prospective teachers participating in the research towards 21st century skills. Before moving on to descriptive statistics, four surveys with missing data were removed from the data set and analyzes were conducted on 341 forms. The other 341 forms didn't have any missing values. After calculating the extreme values and performing normality tests, the data obtained from the surveys determined to be normally distributed was analyzed. T-test and ANOVA tests were applied on the SPSS (Statistical Package for the Social Sciences) Program to reveal the difference between the scores received by prospective teachers from the 21st century skills scale compared to other variables. For hypothesis testing, a significance level (α) of 0.05 was used, meaning results with a p-value less than 0.05 were considered statistically significant. Post hoc tests were applied to the groups to identify specific differences between group means after the ANOVA test indicated significant differences among the groups.

FINDINGS

First, descriptive statistics (mean and standard deviation scores) were calculated both at the total scale score level and in the context of the three dimensions of the scale to determine teacher candidates' 21st century skills competency perceptions, and the findings are given in Table 1.

Table 1. Descriptive statistics on prospective teachers' perceptions of 21st century skills competency

	N	$\overline{X}$	Sd
Learning and Innovation Skills	341	4.13	.53
Life and Career Skills	341	4.32	.44
Information, Media and Technology Skills	341	4.39	.55
21st Century Skills	341	4.26	.42

On Table 1, it is seen that prospective teachers' 21st century skills competency perceptions have the highest mean ($\overline{X} = 4.39$) in the *Information, Media and Technology Skills* dimension, and the lowest mean ($\overline{X} = 4.13$) in the *Learning and Innovation Skills* dimension. In general, it is seen that teacher candidates' 21st century skills competency perceptions are at a high level ($\overline{X} = 4.26$).

T-test was conducted to determine whether prospective teachers' 21st century skills competency perceptions differed significantly based on gender, and the findings are given in Table 2.

Table 2. T-Test results on prospective teachers' 21st century skills competency perception levels by gender variable

	Gender	N	$\overline{X}$	Sd	Sd	T	p
Scale	Female	296	4.28	.42	339	1.94	.05*
	Male	45	4.15	.43			

*$p \leq .05$

Prospective teachers' 21st century skills competency perception levels show a significant difference based on the gender variable, t(339)= 1.94, p ≤ .05. It was found that female prospective teachers' 21st century skills competency perceptions ($\overline{X}$ = 4.28) were higher than male teacher candidates ($\overline{X}$ = 4.15).

Next, ANOVA test was conducted to determine whether teacher candidates' 21st century skills competency perceptions differed significantly based on age, and the findings are given in Table 3.

Table 3. One-Way Analysis of Variance (ANOVA) Results on the Level of Prospective Teachers' 21st Century Skills Competency Perceptions by Age Variable

	Age	N	$\overline{X}$	Sd	F	P	Significant Difference
Scale	18-24 (1)	163	4.11	.42	26.26	.00*	1-2
	25-31 (2)	69	4.32	.40			1-3
	32 + (3)	109	4.46	.35			

*p< .01

Prospective teachers' 21st century skills competency perception levels show a significant difference based on the age variable, F= 26.26, p> .01. Post hoc analysis indicated that teacher candidates aged 25-31 years reported significantly higher competency perceptions compared to those aged 18-24 years (p < .01). In addition, the 21st century skills competency perceptions of teacher candidates in the 32 and above age group are higher than the 21st century skills competency perceptions of teacher candidates in the 18-24 age group. As age increases, the perception of 21st century competency also increases.

ANOVA test was conducted to determine whether prospective teachers' 21st century skills competency perceptions differ significantly based on educational status, and the findings are given in Table 4.

Table 4. One-Way analysis of variance (ANOVA) results on the level of prospective teachers' 21st century skills competency perceptions by educational status variable

	Faculty	N	$\overline{X}$	Sd	F	p	Significant Difference
Scale	Pedagogic Formation/Graduate (1)	151	4.45	.35	12.55	.00*	1-2
	Pedagogic Formation/Undergraduate (2)	98	4.11	.40			1-3
	Faculty of Education/ Undergraduate (3)	22	4.16	.50			1-4
	Faculty of Theology/ Undergraduate (4)	63	4.15	.41			1-5
	Faculty of Sports Sciences/ Undergraduate (5)	7	3.93	.49			

*p< .01

Prospective teachers' 21st century skills competency perception levels show a significant difference based on the educational status variable, F= 12.55, p> .01. With the post hoc analysis, it was found that the 21st century competency perceptions of the pedagogic formation graduate group were higher than the 21st century competency perceptions of all other groups (pedagogic formation undergraduate, faculty of education undergraduate, faculty of theology undergraduate and faculty of sports sciences undergraduate).

DISCUSSION

As a result of the research, it was found that prospective teachers' 21st century skills competency perceptions were generally at a high level. It is seen that teacher candidates' 21st century skills competency perceptions are highest in the information, media and technology skills dimension, and lowest in the learning and innovation skills dimension. Technological knowledge and skills are undoubtedly one of the foundations of Information and Communication Technologies (ICT) integration, and research has shown that improving teachers' technological skills increases the likelihood of using ICT in the classroom (Hammond et al., 2011).

Some studies in the literature show that teachers who consider themselves sufficient in terms of field knowledge are more successful in choosing the appropriate technology for the subject they teach (Başaran, 2020). Accordingly, Murat (2018) found that prospective science teachers' perceptions of their proficiency in 21st-century skills are closely linked to their attitudes toward STEM education, further illustrating the interconnected nature of these competencies. Moreover, Yıldız and Palak (2016) present a transformative teaching model aimed at cultivating global competencies in the 21st-century classroom, highlighting the necessity for educators to adopt innovative and culturally responsive teaching practices. Therefore, it can be concluded that teacher education programs should equip teacher candidates not only with the use of technological tools but also with the skills to effectively integrate these tools into educational processes (Christensen & Knezek, 2017; Foulger et al., 2017). In particular, adopting strategic approaches to developing learning and innovation skills will be an important step in ensuring the integration of

these skills with other competencies and overcoming the difficulties that may be encountered in the journey of becoming a 21st century teacher.

When the 21st century competency perceptions of teacher candidates were examined on the gender variable, it was seen that female teacher candidates had a higher perception than male teacher candidates. It was determined that the age variable had a significant effect on the 21st century skills competency perception levels of teacher candidates. Similarly, Göksün (2017) found a significant difference in favor of women in terms of the gender variable in his research in the context of 21st century competencies. The findings show that women have higher perceptions of competency is consistent with studies highlighting gender differences in educational qualifications. For example, research shows that women generally rate themselves lower in mathematics proficiency than men, despite similar achievements, but rate themselves higher in literacy (Herbert & Stipek, 2005). In another study examining the levels of teacher candidates' 21st century learner and teacher skills and the relationship between these skills in terms of different variables, it was concluded that although there was no significant difference in terms of gender in the context of 21st century learner skills, there was a significant difference in favor of women in the context of teacher skills (Bakır, 2019). Another study suggests that teachers perceive the temperament and educational competency of boys more negatively than girls, indicating a potential gender bias in educational environments (Mullola et al., 2012). In a study conducted by Şahin et al., (2010) to determine the levels of teacher candidates in terms of lifelong learning basic competencies, researchers found that gender was not an effective factor in terms of teacher candidates' lifelong learning basic competencies. On the other hand, in Erten's (2020) research, no significant difference was found between gender and department variables and 21st century skills.

The finding in this study that teacher candidates' perceptions of competency increase as their age increases is consistent with research showing that age can affect teacher perceptions and competence. For example, Mullola et al. (2011) found that teacher age moderated the relationship between perceived student temperament and educational competency and academic achievement. Another study found a positive relationship between grade level and grade point average and the level of use of 21st century learner skills. It was concluded that as these increased, the usage levels of the skills among the participants also increased (Maltepe & Bayrakdar, 2021).

It has been observed that teacher candidates who are graduates have a higher perception than those who are not graduates. The significant differences found by graduation and faculty may be explained by differences in competencies across various educational backgrounds. For example, a study revealed that the field of study affects the perceived competencies in lifelong learning among prospective teachers (Şahin et al., 2010).

These results point to the importance of teacher candidates' 21st century skills competency perceptions. By learning these skills, teacher candidates can provide their students with the skills necessary in the modern world. In particular, the fact that female teacher candidates have a higher perception of these skills can provide a significant advantage for female teachers to provide students with these skills.

The development of 21st century skills in teaching highlights the need for teachers to have not only subject knowledge and core pedagogical competences, but also universal competences shaped by the political and social context. These include skills such as communication, collaboration, leadership, reflection and creativity (Belyaeva et al., 2022). However, the challenges that arise as well as the opportunities in modern teacher education systems appear as a challenge in the process of developing these skills. Especially, the global trends affecting teacher education such as globalization, information and communication technologies, climate change and sustainable development require a paradigm shift in teacher education to prepare teachers with competencies appropriate for the 21st century (Majumdar, 2011). Vats (2020) discusses the need for teachers to effectively support students in the 21st century, emphasizing the need for competencies to interact with students in a diverse and changing world.

There are many studies highlighting the importance of including 21st century skills in teacher education programs in Türkiye (Bakır, 2019). Discussing the applications of 21st century skills in the higher education curriculum, especially in teacher education, Baltacı Göktalay and Özeke (2015) investigate why teacher candidates should be equipped with 21st century skills and competencies to improve their own teaching skills and technology skills and examine the importance of teacher training institutions in the context of higher education qualifications in Türkiye. That study offers suggestions for implementing these competencies in their curricula. Similarly, González-Pérez and Ramírez-Montoya's (2022) study on Education 4.0 in the context of 21st century skills frameworks highlights the role of higher education in responding to the demands of Industry 4.0. That study points to the need for inclusive, equitable and quality education recommendations that are compatible with lifelong learning opportunities, which is vital in the context of the findings of this study on prospective teachers.

CONCLUSION AND RECOMMENDATIONS

Political and higher education environments play a critical role in shaping the competencies of prospective teachers in the 21st century. Collectively, studies in this field demonstrate the need for education systems and policies that will adapt to global trends, societal needs, and technological advances to effectively prepare teachers. This adaptation is necessary to ensure that teachers are equipped with the necessary skills and competencies to meet the challenges of a rapidly changing world and promote inclusive and equitable education.

As a result, including 21st century skills in education programs and ensuring that prospective teachers receive training on this subject is extremely important in terms of providing students with the skills necessary in the modern world. There is a great need

for studies that demonstrate subtle differences in educational competencies among pre-service teachers. As revealed in this study, these differences, influenced by gender, educational background, and age, highlight the complexity of preparing teachers for the diverse challenges of the 21st century. Since it is thought that teacher candidates who are more aware of their own learning and skills will be able to analyze the target audience more effectively in their teaching lives, it is a necessity to increase these skills above the current level.

All in all, to enhance the development of 21st-century skills among teacher candidates, it is essential to integrate learning and innovation skills into the curriculum through project-based and active learning strategies. Providing comprehensive ICT training and ensuring access to up-to-date technological resources are crucial for strengthening technological proficiency. Promoting gender equity through targeted support programs and awareness campaigns can address specific needs and benefits of diverse teaching teams. Implementing mentorship programs and tailored training based on age and experience can leverage the strengths of teacher candidates at different career stages. Developing robust assessment tools and feedback mechanisms will help measure and improve proficiency in these skills.

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Statements of publication ethics

We hereby declare that the study has not unethical issues and that research and publication ethics have been observed carefully.

Researchers' contribution rate

The study was conducted and reported with equal collaboration of the researchers.

**Ethics Committee Approval Information**

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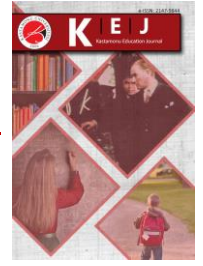
|Research Article/ Araştırma Makalesi|

The Effectof Integrated Turkish and Science Activities in Pre-School Education on Children's Environmental Perception[*]

Okul Öncesi Eğitimde Bütünleştirilmiş Türkçe ve Fen Etkinliklerinin Çocukların Çevre Algısına Etkisi

Semra SAK[1], Atila ÇAĞLAR[2], Burcu ÖZTÜRK[3]

Abstract

Purpose of the Study: The purpose of this study is to determine the effect of integrated Turkish and science activities in the preschool period on children's environmental perception.

Materials and Methods: In the qualitative dimension of the mixed method, a phenomenological design was employed, while in the quantitative dimension, a quasi-experimental design was used. Thestudy conductedwith 20 children.In the experimental procedure, children in both the experimental and control groups were asked to draw an environment picture, and one-on-one interviews were conducted with the children regarding their drawings. The drawings were evaluated using DAET-R and were attempted to be transformed into qualitative form with yellow and blue color tones.

Findings: In the final tests, experimental groups' figures increased in the drawings. It was found that the final test drawings of the children in the experimental group were related to the illustrated books used in the integrated activities.

Key Points: As a result of the study, it was determined that the change in environmental perception of the children in the experimental group, where integrated Turkish and science activities developed with illustrated children's books were applied, progressed more prominently compared to the children in the control group.

Öz

*Çalışmanın amacı:*Bu çalışmanın amacı okul öncesi dönemde bütünleştirilmiş Türkçe ve fen etkinliklerinin çocukların çevre algısına etkisini belirlemektir.

Materyal ve Yöntem: Karma yöntemin nitel boyutunda fenomenolojik desen, nicel boyutunda ise yarı deneysel desen kullanılmıştır. Araştırmanın örneklemini 20 çocuk oluşturmaktadır. Çocuklarabir çevre resmi çizmeleri istenmiş ve çocuklarla yaptıkları çizimler hakkında birebir görüşmeler yapılmıştır. Çizimler Bir Çevre Çiz Test Rubriği ile değerlendirilmiş ve ilgili rubrik sarı ve mavi renk tonları ile nitel hâle evrilmeye çalışılmıştır.

Bulgular: Deney grubunun son testlerinde çizdiği resimlerde çevre ile ilgili figürler artmıştır. Deney grubundaki çocukların son test çizimlerinin bütünleştirilmiş etkinliklerde kullanılan resimli kitaplarla ilgili olduğu bulunmuştur.

Önemli Vurgular: Araştırmanın sonucunda, resimli çocuk kitapları ile geliştirilen bütünleştirilmiş Türkçe ve fen etkinliklerinin uygulandığı deney grubundaki çocukların çevre algılarındaki değişimin kontrol grubundaki çocuklara göre geliştiği ve daha belirgin olduğu belirlenmiştir.

INTRODUCTION

The preschool period, which is considered as the golden years in an individual's life, is known as a critical period during which children experience rapid development in social-emotional, cognitive, language, motor skills, and self-care abilities (Satterlee, 2010; Yılmaz, 2010; Ahi et al., 2014). The behaviors and knowledge acquired during this period tend to be long-lasting (Satterlee, 2010; Yılmaz, 2010; Ahi et al., 2014). The knowledge, skills, and habits acquired during the preschool period are considered to be more structuring in life compared to those acquired in other developmental stages.

Assisting children in completing the preschool period efficiently can be achieved through providing them with rich and diverse learning environments. For the benefit of children in preschool education, educational environments are expected to be well-structured, flexible, inclusive, consistent, up-to-date, and scientific. The concept of the environment, including environmental issues, environmental awareness-attitude, and sustainable development, is among the current topics that can be addressed during the preschool period (Seppälä, 2022). Adapting activities to the principles of relevance and proximity to life in preschool education environments ensures that children complete this critical period effectively (MEB, 2013).

Environmental sustainable behaviors (such as recycling, respect for living beings, energy conservation, environmental protection, etc.) necessitate a correct environmental awareness (Sawyer, 2013). To gain this awareness, increasing individuals' environmental perception through environmental education is important (Shepardson et al., 2007; Özdemir, 2010; Cheng and Monroe, 2012). Grodzińska-Jurczak (2006) noted that the effects of environmental education largely depend on the age at which education begins. Therefore, it is considered important to prioritize environmental education given during the preschool period.

As our responsibility towards the environment increases, how the concept of the environment is perceived becomes important. Depending on the individual's perspective, different definitions of the environment concept can be made (Şahin, 2008). When making these definitions, age, experience, and the effectiveness of the environmental education provided are considered. Fleer (2002) found in her study with children of different ages that children's perceptions of the environment they want to live in are technology-based, and as the age of the participating children increases, there is a pessimistic view of environmental awareness for the future.

The achievements and concepts aimed to be gained by preschool children are found in Turkish, science, mathematics, play, music, art, movement activities, and field trips in educational environments. Environmental sensitivity and awareness are sought to be imparted to children through activities during this period. Moreover, in preschool education, the integration of multiple activity types with appropriate transitions creates integrated activities in educational environments (MEB, 2013). The integration of Turkish and science activities forms the basis for the experimental part of this research.

According to the Preschool Education Program, Turkish activities are planned to help children speak Turkish correctly and beautifully, develop their vocabulary, facilitate their daily lives, and ultimately improve their communication skills (Öztürk, 2010; MEB, 2013, p. 46).

Preschool children who do not know how to read and write can meet their communicative need for reading books through adults in Turkish activities (Karaman Benli, 2018). Thus, Turkish activities create a meaningful language environment for children (Öztürk, 2010). This environment helps children progress in their cognitive, language, and socio-emotional development areas (Uslu, 2020).

The diversity of topics covered in Turkish activities may increase the frequency of implementation of these activities in educational environments. Because any topic in the child's daily life can be included in Turkish activities with illustrated children's books. Recently, issues such as sustainability, including recycling, reuse, carbon and water footprint, food consumption, and efficient use of natural resources, are included in educational environments through children's books (Kuşçuoğlu, 2022).

Illustrated children's books, one of the materials used in Turkish activities, can contribute to children's learning of scientific concepts and the development of early literacy skills (Leung, 2008). To develop early literacy skills, teachers should read books aloud to children and create environments in classrooms where children can examine books (Rixsiboyevna, 2020). Additionally, a child who wants to establish a relationship between the picture and the text in picture books will engage in a cognitive process (Dong, 2016). As the subject in the book is processed in the mind, the development of characteristics such as knowledge, perception, and awareness related to the subject is expected.

The reading action involves analyzing any visual or auditory product created for meaning, such as a picture, cartoon, symbol, and it is when a written text gains meaning in the reader's mind (İnce Samur, 2016). To adapt to changing and evolving world conditions, it is important for reading action to be at a desirable level and for "reading" to become a culture in the individual (Akkaya, 2021). When considering that the responsibility of preschool period is to gain children's love of books, practices carried out through books can be considered as the first steps taken to create a reading culture (Öztürk, 2020).

Reading culture; starting from the preschool period, it is the process of the individual encountering visual and written cultural products, gaining a love and interest in reading, acquiring reading skills as the educational level increases, turning this skill into a reading habit, then raising the reading skill to a critical reading level and transforming it into a lifestyle (İnce Samur, 2016). Reading culture in the preschool period is largely provided through children's literature products (Akkaya, 2021). Practices starting from this period and bringing children's literature together with other areas are effective in gaining children's reading culture (Öztürk, 2020). Children who meet books at an early age feel the need to benefit from literature, thus, this need can be considered as the

first step of reading culture. In short, reading culture, defined as the reading action turning into a lifestyle, also stems from the individual's need for literature.

The attention spans of preschool children during activities may be short. Integrating activities with appropriate transitions is useful for maintaining continuity in teaching. Ensuring continuity in activities will contribute to children's easier acquisition of the relevant achievement. In a study conducted to determine the views of preschool teachers about the preschool education program, half of the participating teachers (n=20) stated that they preferred integrated activities to achieve the relevant achievement (Köksal et al., 2016).

In a study involving 255 preschool teachers, teachers expressed the importance of integrated curriculum with the following statements:

• Integrated curriculum is child-centered.

• Integrated curriculum ensures that children learn permanent knowledge.

• Integrated curriculum prepares children for primary education.

• Preschool teachers can implement integrated curriculum more easily, creatively, and fun (Öztürk and Tantekin Erden, 2011).

In another study conducted with preschool teachers (n=22), teachers specified the categories of activities to be conducted during reading and after-reading activities. In the category of activity types during reading, drama activity, question-answer, and art activity were mentioned by teachers. These specified categories may necessitate considering other types of activities that can be integrated with reading activities. After reading picture storybooks, various activities can be used under the category of expansion activities (Hsiao & Shih, 2016). Martin et al. (2019), through the examination of 30 children's books, stated that integrating other disciplines with picture books affects children's environmental awareness and attitudes towards science. In his study, Dilidüzgün (2004) provides examples of how storybooks can be integrated with other activities or daily life in the correlation sections of the practice examples he presents regarding storybooks.

Similowski (2022) provided examples of experiments that encourage thinking about the reading experience and turning reading into action. Teachers often use nursery rhymes, finger games, and question-answer methods in Turkish activities to attract children's interest in science activities (Özbek & Sığırtmaç, 2009). Picture books are frequently used in preschool Turkish activities (Çabuk et al., 2017). In addition, integrating science activities with picture books may be effective in imparting scientific concepts to children (Yıldız, 2019). French (2004) implemented an intervention program where science activities were integrated with children's literature and noted that children made linguistic and cognitive development progress as a result of the study.

In preschool education classrooms, children's literature can be combined with science activities. Therefore, in the teacher training process, candidates should be equipped with skills for integrating science activities with computer technology, children's literature, and mathematics (Saçkes et al., 2012). Integrating science activities with other activities in educational environments helps children acquire cognitive skills and also helps correct children's misconceptions (Ansberry & Morgan, 2010; Bahar & Aksüt, 2020). While ensuring this integration, it is expected that picture books will be compatible with the nature of science and technology (Cho & Kim, 1998).

The field of science is intertwined with life and various topics in children's books, and these plots can provide children with different perspectives and understandings (Demircioğlu et al., 2006). In their study, Yulıana et al. (2021) provided context-based science education to fifth-grade students through picture books on real-life issues, and an increase in children's scientific literacy was observed in the final test. Integrating different disciplines in educational practices may largely depend on the structure of the subject matter being addressed.

Environmental education has a structure suitable for integrating different disciplines into educational environments (NAAEE, 1999). Different methods and techniques support children's learning and enable them to gain versatile experiences (Lukkarinen & Peltola, 2018). In this sense, integrated activities contribute to the development of children's environmental awareness (Akbayrak & Kuru Turaşlı, 2017). Therefore, integrated activities are thought to involve children in a comprehensive educational content without disrupting the integrity of learning environments. Because this type of activity, designed by integrating at least two activities, can create a productive learning environment for children by balancing the strengths and weaknesses of the activities that make it up.

Integrating activities in the preschool period can open the door to an interdisciplinary educational environment. Interdisciplinary approach is based on relationships rather than distinctions (Sever & Yalçınkaya, 2018). Different disciplines can also be discussed in integrated activities. Especially, picture books used in Turkish activities are integrated with various activity types to teach children concepts and achievements related to environment, science, art, social relations, and societal values, and children gain knowledge and skills related to different disciplines through books used in activities. This study investigates the effect of integrated Turkish and science activities on preschool children's environmental perception.

METHOD/MATERIALS A mixed-method approach was used in the study. Mixed-method is a method in which qualitative and quantitative methods/data are used together. The qualitative dimension of the study used a phenomenological design. In phenomenological design, the perception of a group related to a phenomenon is tried to be determined. In this design, researchers try to obtain in-depth information about the inner world of participants. Interviews are mostly used in phenomenological design (Fraenkel et al., 2012). This study attempts to reveal the environmental perceptions of children aged 48-72 months in the

preschool period through the pictures they draw. To conduct in-depth examination, the drawings made by children and the expressions they used to describe their drawings were used.

The quantitative dimension of the study used a quasi-experimental design. In quasi-experimental models, the researcher applies the process he/she wants to see the effect of on the experimental group, and does not apply any process to the control group. The researcher has the opportunity to evaluate the effect of the program applied in the quasi-experimental model's post-test (Cohen et al., 2017/2021).

Sample The study group (sample) of the research consists of preschool children aged between 48-72 months who attended kindergarten in the 2022-2023 academic year. The research includes a total of 20 children, with 10 children in the experimental group and 10 children in the control group. The district where the children are located/reside is rich in natural beauty and intertwined with nature. The sample of the research was selected through convenience sampling, which is one of the non-probability sampling methods. Convenience sampling method is the selection of a sample group that the researcher can easily reach in terms of time, money, and labor factors (Fraenkel et al., 2012).

Data Collection Tools In the research, children's drawings related to the environment and the interview notes about these drawings were used as data collection tools. Interviews about the drawings help guide researchers in understanding expressions that the individual cannot express or did not express in the drawing (Gan, 2021). In addition, drawings made by children are a communication tool that allows us to describe children's inner worlds, reveal the interaction of the child with the environment, and enable children to express their inner world through drawings when they cannot express it in language (Yılmaz, 2010; Yavuzer, 2017).

One-on-one interviews were conducted about the drawings made by the children, and the children were asked to explain their drawings. The questions asked to the children during the interviews were as follows:

1. What do you think the environment is?
2. What constitutes the environment?
3. What living and non-living things are there in our environment?
4. Do you like the environment? Why?
5. What does your drawing tell us?

In the research, the drawings made by children were converted into quantitative data using the "Draw-An-Environment Test Rubric (DAET-R)" to score the drawings. In the scoring stage, the "Draw-An-Environment Test Rubric (DAET-R)" developed by Moseley et al. (2010) was used. Such scales are used to measure an individual's perception of any subject (Jose et al., 2017). The Turkish version of this rubric was obtained from Ahi's (2015) study.

Draw an Environment Test – Rubric (DAET-R)

Factör	Present	Interactions with other factors	System interactions made explicit	P.
	0 point	**1 point**	**2 point**	**3 point**
Human	Drawing does not contain pictures of humans.	Human(s) drawn without any apparent interaction with other factors.	Human(s) drawn interacting with other humans and/or another factor (e.g., human fishing or walking on a bridge), but without special emphasis placed on the influence of the interaction on the environment.	Humans drawn with obvious deliberate emphasis placed on interaction with one or more factors and the influence of that interaction on the environment through the use of special indicators such as conceptual labels and/or arrows.	
Living organism	Drawing does not contain pictures of living organisms.	Living organisms (e.g., plants and animals) drawn without any apparent interaction with other factors	Living organisms drawn interacting with other living organisms and/or another factor (e.g., animals grazing), but without special emphasis placed on the influence of the interaction on the environment.	Living organisms drawn with obvious deliberate emphasis placed on interaction with one or more factors and the influence of that interaction on the environment through the use of special indicators such as conceptual labels and/or arrows.	
Abiotic element	Drawing does not contain pictures of abiotic factors.	Abiotic items (e.g., mountains, rivers, Sun, or clouds) drawn without any apparent interaction with other factors.	Abiotic items drawn interacting with other abiotic items and/or another factor (e.g., wind blowing a palm tree), but without special emphasis placed on the influence of the interaction on the environment.	Abiotic items drawn with obvious deliberate emphasis placed on interaction with one or more factors and the influence of that interaction on the environment through the use of special indicators such as conceptual labels and/or arrows.	
Man-made	Drawing does not contain pictures of human built factors.	Human built or designed items (e.g., buildings, automobiles, and bridges) drawn without any apparent interaction with other factors.	Human built items drawn interacting with other human built items and/or another factor (e.g., smokestack emitting smoke into the air), but without special emphasis placed on the influence of the interaction on the environment.	Human built items drawn with obvious deliberate emphasis placed on interaction with one or more factors and the influence of that interaction on the environment through the use of special indicators such as conceptual labels and/or arrows.	

Total possible points: 12 Total points

Figure 1.Draw-An-Environment Test (DAET-R)

Data Collection Process

The data were collected over a period of 9 weeks. Initially, children in the experimental and control groups were asked the question "What do you think the environment is?" and were requested to make a drawing related to their perceived environment. Necessary precautions were taken to ensure that children were not influenced by each other. Pastel paint was preferred for drawing as it was easy for children to use. The flowchart of the study process is presented in the table below.

Table 1. Flowchart of the study process

Group name	Pre test		The implementation of integrated activities	Post test
Experimental Group	X	X		X
Control Group		X		X

The interviews were conducted in environments familiar to the children. During the interviews, children were asked to describe the compositions in their drawings and the codes they used. To find answers to these questions, children were asked, "Can you tell me about your drawing? What did you draw here (pointing to the drawn figure)?" The responses given by the children were noted by the researcher. This process was applied to both the experimental and control groups as pre-test and post-test.

Nine integrated Turkish and science activities, developed within the scope of the research, were implemented for the experimental group once a week (on Mondays) for nine weeks by the researcher. This duration has also been found sufficient in relevant studies (Özdemir & Uzun, 2006; Gezgin, 2019; Köroğlu, 2019; Yıldız, 2019). The children in the control group did not receive any education related to the environment for nine weeks, and the activities in the existing preschool education program continued to be implemented according to the class teacher's plan.

Table 2. Activities implemented within the scope of the study

The name of the activity	The illustrated children's book used in the activity	The desired achievement related to the environment
Where Do You Live?	Pepe the Snail and Zeze the Giant Whale	• Gains knowledge about the habitats of animals. • Respects the lives of living beings.
Let the Animals Appear!	Small Animals	• Pays attention to animals of different sizes living in the environment. • Respects the diversity in the environment.
How Does a Tree Feed?	Generous Tree	• Gains knowledge about the parts of a tree. • Becomes aware of the benefits of trees.
The Journey of a Seed	Tiny Seed	• Develops awareness about the growth stages of seeds. • Gains knowledge about the living conditions of surrounding plants.
Çeri and Friends	Green Tomato Cherry	• Develops awareness about living and non-living beings in the environment.
Our Clean Environment	Ecological Neighborhood	• Gains awareness about recycling. • States what needs to be done to keep the environment clean.
What Happened to the Snowflake?	Little Snowflake	• Gains knowledge about the different states of water. • Develops awareness about natural phenomena in the surrounding environment. •
Let's Build a Home for Soso	Soso's Compost Book	• Acquires knowledge about the formation of soil. • Gains awareness about life within the soil.
What is the Purpose of Rainwater?	Water is Life	• Explains the importance of water for our lives. • Explores different ways to conserve water.

The activities related to science were allocated one week each, as observation is required for each activity. Indeed, in early childhood, children should be given time to observe and share their observations with others in order to become literate in science (AAAS, 1993).

TableHata! Belgede belirtilen stilde metne rastlanmadı.**. Book titles used in activities**

Book title	Author	Page count	Publication year
Small Animals	Bahar Havzalı Şener	20	2019
Pepe the Snail and Zeze the Giant Whale	Julia Donaldson	31	2021

Tiny Seed	Eric Carle	32	2022
Generous Tree	Shel Silverstin	60	2018
Green Tomato Cherry	Gonca Mine Çelik	32	2018
Ecological Neighborhood	Ralph Weder	32	2021
Little Snowflake	Sima Özkan	30	2022
Soso's Compost Book	Charles Ghigna	24	2018
Water is Life	Suzanne Fossey	24	2022

Data Analysis

Quantitative data obtained from the DAET-R (Draw-An-Environment Test Rubric) have been converted into qualitative form using shades of yellow and blue. For the analysis of the research data, the scoring criteria within the DAET-R have been transformed into colors (yellow and blue). Possible scores from the relevant rubric are represented with the following colors:

Table 4.The expression of the items of DAET-R in shades of yellow.

The relevant factor is not included in the picture	The existing figure	Interaction with other factors	Open interaction within the system
0 point	1 point	2 point	3 point

The total points that can be obtained from the rubric are represented in shades of blue. The points obtained from the rubric table are reflected on the blue color scale as follows. It can be said that as the color tone obtained from the child's drawing darkens, their environmental perception has also developed.

Table1.The expression of total scores obtained from DAET-R in shades of blue.

0-1-2-3 point	4-5-6 point	7-8-9 point	10-11-12 point
Low	Average	Good	Very good

Furthermore, the points obtained by the children from the rubric table were entered into the SPSS 23 program, and the necessary analyses were conducted.

FINDINGS

Figure 2.Results of the categories of DAET-R in the pre-test and post-test of the experimental group.

Table 6. The codes and frequencies used in the pre-test and post-test drawings of the experimental group.

Codes	Pretest (f)	Posttest (f)
Person	15	15
Tree	9	14
Sun	7	8
Grass	5	8
House	5	4
Rainbow	3	0

Code	Pretest		Posttest
Cloudy	2		4
Fruit	2		3
Bushes	1		0
Lightning	1		0
Garbage truck	1		0
Mountain	1		0
Flower	1		2
Rain drop	1		6
Watercolor	1		0
Table	1		0
Chair	1		0
Basket	1		0
Rabbit	1		3
Seed	0		1
Bird	0		3
Fly	0		1
Dog	0		1
Cat	0		3
Chicken	0		1
Flamingo	0		2
Giraffe	0		1
Goal	0		1
Rubbish	0		4
Bin	0		1
Watering can	0	1	
Toy	0		1
tree roots	0		2
Moon	0		1
Star	0		1
Total	59		92

	Human		Living organism		Abiotic element		Man-made	
	pre	post	pre	post	pre	post	pre	post
K_1								
K_2								
K_3								
K_4								
K_5								
K_6								
K_7								
K_8								
K_9								
K_{10}								

Figure3. The results of the control group's categories from the DAET-R in the pre-test and post-test.

Table 7. The codes and frequencies used in the pre-test and post-test drawings of the control group.

Codes	Pretest (f)	Posttest (f)
Person	23	15
Car	12	15
Cloudy	8	5

House	7	5
Sun	4	6
Path	2	2
Traffic sign	2	0
Grass	3	7
Fish	3	0
Octopus	1	0
Sea	1	0
Soil	1	1
Snake	1	1
Swing	1	0
Toy	1	1
Washing	1	1
Tree	0	6
Flower	0	5
Bin	0	2
Umbrella	0	1
Bird	0	3
Spider	0	1
Total	71	77

The findings obtained from the interviews and evaluations are as follows: It was observed that both the control and experimental group children categorized the entities in the environment where the interviews were conducted in response to the question "What is alive and non-living in your environment?" In the preliminary interviews of both the experimental and control groups, it was found that the children classified trees as non-living. While this situation continued in the final interviews of the control group children, the experimental group children stated that trees were living in the final interviews. It was noticeable that both experimental and control group children frequently used the human factor in their pre-test and post-test drawings, but the number of children in the experimental group emphasizing the effect of humans on the environment (dirty and clean environment) increased in their final test drawings.

Figure4. The results obtained from DAET-R in the pre-test and post-test of the experimental group.

Children with codes D1 and D6 had poor environmental perceptions in the pre-test, but this improved to a moderate level in the post-test. Children with codes D2, D3, and D7 showed an improvement in environmental perception from poor to good. Children with codes D4, D5, D9, and D10 saw their environmental perceptions improve from moderate to good in the post-test. The environmental perception of the child with code D8 improved from moderate to very good in the post-test. It can be observed that the environmental perception of the children in the experimental group increased in the post-test according to the blue color tone obtained from the DAET-R.

Figure5.The results obtained from the DAET-R for the control group in the pre-test and post-test.

Out of the children in the control group, six of them have maintained a moderate level of environmental perception in both the pre-test and post-test. The environmental perception of the child with code K_6 has deteriorated from a moderate level to a poor level in the post-test. The environmental perception of the child with code K_{10} has remained at a poor level without any change in the post-test. The environmental perception of the children with codes K_4 and K_9 has improved from a poor level to a moderate level in the post-test.

Table 8. The number of codes used by the experimental and control groups in the pre-test and post-test are as follows

Group	Pre-test (f)	Post test (f)
Experimental	59	92
Control	71	77
Total	130	169

In the experimental group, the total number of codes used in the pre-test was 59, while this number increased to 92 in the post-test, indicating a 55.9% increase. In the control group where integrated Turkish and science activities were not implemented, the total number of codes increased from 71 to 77 in the post-test.

The Statistical Tests and Analyses Conducted within the Scope of the Research

During the data collection phase of the research, the scores obtained by children from the rubric sheets were transferred to the SPSS 23 program, and the tests and analyses conducted were expressed through the following tables.

Skewness and kurtosis values for participants' pre-test and post-test rubric scores were evaluated (Table 9). Skewness and kurtosis were examined within the range of +2 and -2 (Huck, 2012). According to the results obtained, it was determined that the skewness values of participants' pre-test and post-test rubric scores (pre-test=-0.538, post-test=0.609) and kurtosis values (pre-test=-0.544, post-test=0.356) were within the range of -2 to +2. Since the skewness and kurtosis values were within the -2 to +2 range, it was found that the pre-test and post-test rubric scores of the participants followed a normal distribution.

Table9.The descriptive findings and skewness-kurtosis values for all participants' pre-test and post-test rubric scores were evaluated.

	X ± SS	M	Min - Max	Skewness	Kurtosis
Pre Test	3,90 ± 1,33	4,00	1 - 6	-0,538	-0,544
Post Test	6,00 ± 2,05	6,00	3 - 11	0,609	0,356

The skewness and kurtosis values for the pre-test and post-test rubric scores of participants in the control and experimental groups were examined (Table 10). According to the results obtained, it was found that the skewness values of the pre-test and post-test rubric scores of participants in the control group (pre-test=-1.262, post-test=-0.111) and the kurtosis values (pre-test=-0.068, post-test=-0.623) were within the range of -2 to +2. Since the skewness and kurtosis values were within the -2 to +2 range, it was determined that the pre-test and post-test rubric scores of participants in the control group followed a normal distribution.

It was determined that the skewness (0.000) and kurtosis (0.239) values of the pre-test rubric scores of the participants in the experimental group were within the range of -2 to +2. Since the skewness and kurtosis values were within this range, it was found that the pre-test rubric scores of the participants in the experimental group followed a normal distribution.

Table10.Descriptive findings and skewness-kurtosis values for pre-test and post-test rubric scores of participants in the control and experimental groups.

		X ± SS	M	Min - Max	Skewness	Kurtosis
Control Grubu	Pre Test	4,30 ± 1,16	5,00	2 - 5	-1,262	-0,068
	Post Test	4,40 ± 9,97	4,50	3 - 6	-0,111	-0,623
	Pre Test	3,50 ± 1,43	3,50	1 - 6	0,000	0,239

Experimental Grubu	Post Test	7,60 ± 1,51	7,00	6 - 11	1,348	2,082

It was determined that the skewness value of the post-test rubric scores of the participants in the experimental group is 1.348, and the kurtosis value is 2.082. Since the kurtosis value is not between -2 and +2, it was found that the post-test rubric scores of the participants in the experimental group did not show a normal distribution. Therefore, square root transformation was applied to the participants' pre-test and post-test rubric scores.

Table11.Descriptive findings and skewness-kurtosis values for pre-test and post-test rubric scores of all participants after square root transformation.

	X ± SS	M	Min - Max	Skewness	Kurtosis
Pre Test	1,94 ± 0,37	2,00	1,0 – 2,5	-0,953	0,536
Post Test	2,42 ± 0,42	2,45	1,7 – 3,3	0,197	-0,228

The skewness and kurtosis values of participants' pre-test and post-test rubric scores after square root transformation were examined (Table 11). According to the results obtained, it was determined that the skewness (pre-test=-0.953, post-test=0.197) and kurtosis values (pre-test=0.536, post-test=-0.228) of participants' pre-test and post-test rubric scores after transformation were between -2 and +2. Due to the skewness and kurtosis values being between -2 and +2, it was determined that participants' pre-test and post-test rubric scores were normally distributed after square root transformation.

Table12.Descriptive findings and skewness-kurtosis values for pre-test and post-test rubric scores of participants in the control and experimental groups after square root transformation.

		X ± SS	M	Min - Max	Skewness	Kurtosis
Control Grubu	Pre Test	2,05 ± 0,31	2,24	1,4 – 2,2	-1,362	0,464
	Post Test	2,09 ± 0,23	2,12	1,7 – 2,5	-0,309	-0,658
Experimental Grubu	Pre Test	1,83 ± 0,41	1,87	1,0 – 2,5	-0,647	0,833
	Post Test	2,75 ± 0,26	2,65	2,5 – 3,3	1,137	1,479

The skewness and kurtosis values of the pre-test and post-test rubric scores of participants in the control and experimental groups after square root transformation were examined (Table 12). According to the results obtained; it was found that the skewness (pre-test=-1.362, post-test=-0.309) and kurtosis values (pre-test=0.464, post-test=-0.658) of the pre-test and post-test rubric scores after transformation were between -2 and +2 for participants in the control group. Due to the skewness and kurtosis values being between -2 and +2, it was determined that the pre-test and post-test rubric scores of participants in the control group were normally distributed after square root transformation.

For participants in the experimental group, it was found that the skewness (pre-test=-1.647, post-test=1.137) and kurtosis values (pre-test=0.833, post-test=1.479) of the pre-test and post-test rubric scores after transformation were between -2 and +2. Due to the skewness and kurtosis values being between -2 and +2, it was determined that the pre-test and post-test rubric scores of participants in the experimental group were normally distributed after square root transformation.

Table13. Assessment of pre-test and post-test rubric scores of participants in the control and experimental groups.

	Control Group (N=10)		Experimental Group (N=10)		t [a]	p
	X ± SS	M (Min - Max)	X ± SS	M (Min - Max)		
Pre Test	4,30 ± 1,16	5,00 (2 - 5)	3,50 ± 1,43	3,50 (1 - 6)	1,372	0,187
Post Test	4,40 ± 9,97	4,50 (3 - 6)	7,60 ± 1,51	7,00 (6 - 11)	-5,657	**0,000***
t [b]	-0,287		-10,077			
p	0,780		**0,000***			

The pre-test and post-test rubric scores of participants in the control and experimental groups were evaluated in the study (Table 13). According to the results obtained; the average pre-test rubric score of participants in the control group was 4.30 ± 1.16, and the average post-test rubric score was 4.40 ± 9.97; the average pre-test rubric score of participants in the experimental group was 3.50 ± 1.43, and the average post-test rubric score was 7.60 ± 1.51.

There was no statistically significant difference between the pre-test and post-test rubric scores of participants in the control group (p>0.05). However, there was a statistically significant difference between the pre-test and post-test rubric scores of participants in the experimental group (t=-10.077; p<0.05). It was found that the post-test rubric scores of participants in the experimental group were higher than those in the pre-test.

There was no statistically significant difference between the pre-test rubric scores of the control group and the experimental group (p>0.05). However, there was a statistically significant difference between the post-test rubric scores of the control group and the experimental group (t=-5.657; p<0.05). It was determined that the post-test rubric scores of participants in the experimental group were higher than those in the control group.

DISCUSSION

This research investigates the impact of integrated Turkish and science activities on children's environmental perception. In the experimental group, children were exposed to integrated Turkish and science activities with an environmental theme. The increase in the variety of codes (+16) used by the children in the experimental group in describing environmental pictures and in their drawings in the post-test may indicate a positive impact of the activities on children's environmental perception. It is believed that the pictures used in children's books and the complementary words associated with these pictures contribute to enriching children's vocabulary. The fact that the words used by the children in the final test drawings were related to the books they read supports this notion. For example, Child D_5 depicted an event from the book "Minik Tohum" and used the following expressions to describe his drawing: "The girl came to collect garbage. As the rain falls, the seeds grow. One of the seeds remained under the leaf. The sun cannot reach it. So, the seed cannot grow." This finding is consistent with the study by Breitfeld et al. (2021), which suggests that children remember the details of the story and learn new words after reading picture books. Reisberg and Han (2009) also suggest that the images in picture books enhance children's visual culture and help them understand complex messages, thus developing environmental awareness. Çer (2016) argues that a visual that captures a child's interest in a book can enhance their ability to draw. The increase in the number of codes from 59 in the pre-test to 92 in the post-test in the experimental group aligns with existing literature. Therefore, it is expected that picture books should be used more frequently in homes and educational environments to support the cognitive and language development of preschool children and prepare them for literacy when they start elementary school. The results of this study emphasize the importance of meeting this expectation.

The experimental group showed an increase in the frequency of living organisms from zero in the pre-test to various organisms such as seeds, birds, flies, dogs, cats, chickens, flamingos, and giraffes in the post-test. Abiotic elements identified included lakes, tree roots, the moon, and stars. Based on these findings, it can be said that integrated Turkish and science activities have contributed to the development of environmental perception in the experimental group.

In a study by Gonzalez et al. (2010), preschool children were read books related to social sciences and science. The results showed an increase in the children's vocabulary related to science. It can be argued that achieving the desired outcomes through characters and images in children's books tailored to their developmental level would be easier for children. This is because characters in picture books are effective in shaping children's attitudes toward the environment (Çabuk et al., 2020). Within the scope of this study, it can be said that characters and events in picture books read to the experimental group have enhanced their environmental perception. Similarly, Polat (2021) found in his study that environmental education using picture books positively influenced children's environmental attitudes and views on the environment.

The structure of environmental-themed science activities can be presented to children through characters and plotlines in children's books, allowing children to identify with the characters and thereby enhancing their environmental awareness. It is believed that observations and experiments conducted in science activities encourage active participation in environmental issues among children. The darkening of the blue color tone in the final tests of the experimental group suggests an increase in children's environmental awareness. Considering that the integrated activities applied to the experimental group are likely the cause of this change, it can be said that the content of the activities affects children's environmental awareness. When integrated Turkish and science activities are evaluated within the scope of environmental education, as also emphasized by Güzelyurt and Özkan (2019), directing children towards activities where they can see results, conveying the idea that they can do something for the environment, and increasing children's environmental consciousness are important. The use of illustrated children's books in environmental education contributes to children's scientific development and helps them understand their surroundings by enabling them to identify with the characters in the books (Hsiao and Shih, 2015). The emphasis on human figures and their impact on the environment in the final test drawings of the experimental group may indicate that the activities have prompted the idea of active participation in environmental issues in children's minds.

Illustrated books can enhance children's drawing abilities and facilitate the expression of schemas in their minds. It is believed that visuals related to the environment in books can influence children's environmental perceptions. Fang (2018) argued that the visuals in illustrated books develop children's imagination and provide them with an aesthetic experience. According to Senokossoff (2013), the visuals in illustrated books facilitate children's connection with the text. Additionally, it is thought that children can improve their drawing abilities by seeing and examining the same figure drawn differently in illustrated books. Evaluating what children draw and using their drawings to understand their inner worlds can be an alternative assessment tool for researchers. Flowers et al. (2015) stated in their study that drawings are an effective tool for evaluating the results of environmental education given to individuals. Illustrated children's books are considered as valuable material that can enhance children's drawing abilities and broaden their horizons. Similarly, in a study by Cainey et al. (2012), the reason for the significant presence of book-related drawings in pre-trip and post-trip evaluations of children's drawings to measure the impact of an aquarium trip was attributed to the influence of visuals in books on children's drawing skills. It is believed that the visuals in

illustrated books guide children in expressing their emotions and thoughts and that the improvement seen in the final test drawings of the experimental group in the study is related to the illustrated books read.

Considering that environmental education aims to develop children's perception, attitude, and awareness of the environment, it is known that children's participation in these educations is crucial for a sustainable future. It is believed that not only the educational environment but also the attitude of the family is important in the failure of these educations to achieve the desired goal. Sawyer (2013) attributed children's non-participation in environmental activities to the lack of parents who could serve as role models for children, emphasizing the importance of parents placing importance on environmental education to develop environmental paradigms. In this context, the fact that the environmental perceptions of some children in the experimental group may not be at a higher level could be related to the family's perspective on the environment.

In the conducted study, it is observed that both the control and experimental groups frequently included human elements in their pre-test drawings. Children perceive humans as part of the environment. This finding is consistent with similar studies (Özsoy, 2012; Fraijo-Sing et al., 2020). Children considering humans as part of the environment may imply that they perceive human impact on the environment to be significant. This is evident in the final test drawings of the experimental group, where children (n=3) divided the paper into two parts, drawing a dirty and clean environment and associating the cleanliness of the environment with human elements. Hsiao and Shih (2015) also found in their study that after reading illustrated books to children, their drawings frequently included human and house figures. Similarly, Yurttaş (2023) investigated children's perceptions of environmental issues and found that children perceived littering, environmentally irresponsible activities, and negative human influence as the causes of environmental problems. In this regard, the integrated activities conducted in the research may have facilitated children's recognition of the connection between the human factor and the environment. It can be argued that the events experienced by characters in the read illustrated books and the complementary science activity provided an environment for children to think in this way. Additionally, the changing climate conditions and human-induced destruction in nature over time may have created an perception among children in early childhood that humans can dominate the environment and natural life.

Some children in the experimental group (n=7) mentioned in their final test drawings that the human factor was responsible for polluting the environment and that this pollution affected other living beings (plants and animals). The fact that this environmental pollution is of human origin is noteworthy. This attitude of children in the experimental group may indicate a sense of responsibility towards nature. Environmental education is concerned with teaching children to take responsibility and care for their immediate and distant environment (Dighe, 1993). Similar studies have also found that preschool children identify the source of environmental problems as the human factor (Tarman and Kükürtçü, 2022; Güngör et al., 2023).

The human factor is prominent in the environmental drawings of children in both the experimental and control groups, including in pre- and post-tests. Drawings then depict a place where plants and animals live. Despite various definitions of the environment in studies involving different age groups, the environment is predominantly expressed as a place where plants and animals live (Shepardson et al., 2007). In Tarman and Kükürtçü's (2022) study, children did not include the human factor in their drawings depicting their perceptions of nature. The findings of the study in this regard differ from the literature.

In their study, Shepardson and others (2007) categorized children's mental models about the environment into four categories, and model 3 was defined as a place influenced or altered by human activity or intervention, ranking third in frequency within the scope of the study. In this context, both groups (experimental and control) emphasizing the human element in their pre-test environmental drawings may be related to the age group of the children. As children's age increases, they may pay more attention to natural elements regarding the environment and may perceive the environment more as nature itself. Additionally, the tendency of the experimental group to predominantly depict the environment as dirty or clean due to human influence in their final test drawings is consistent with the study conducted by Shepardson et al. (2007). The frequent use of the human factor in children's drawings may indicate that children perceive humans as an integral part of the environment.

When book reading activities and hands-on activities are integrated, misconceptions in children can be corrected (Leung, 2008). It is noteworthy that in the pre-test interviews, children in both the experimental and control groups indicated trees as inanimate objects. However, it was observed that the misconceptions of the children in the experimental group, where integrated Turkish and science activities were implemented, were corrected in the post-test interviews. Integrated activities are thought to be effective in achieving outcomes in preschool education. In a study by Yıldız and Akman (2022) with preschool teachers, teachers stated that they mostly incorporate integrated activities in the process of imparting pattern acquisition skills to children.

It is believed that the reason for the positive changes in children's environmental perceptions is the practical nature and active participation required in the integrated Turkish and science activities within the content of integrated activities. Burke and Cutter Mackenzie (2010) state that education provided with picture books develops children's motivation for active participation in the environment, enhances ecological literacy along with visual literacy skills, and enables children to gain environmental awareness. Reading picture books to children can contribute to the development of constructive behaviors regarding their surroundings, sensitivity to environmental issues, and proposing solutions (Suh, 2022). Children gained experience through hands-on activities during the activities, which led to an increase in environmental awareness among the children in the experimental group. Similarly, in a study conducted by Kos et al. (2016) with preschool children, involving children in hands-on activities enabled them to understand the causes and effects of their behaviors on the environment. Parallel to the conducted study, Duran (2023) argues that when environmental education is implemented with an interdisciplinary approach, more effective results can be achieved.

In the study by Cheng and Monroe (2012), the perceptions of 80 fourth-grade children towards nature were grouped around the titles of enjoyment of being in nature, respect and love for all living things in nature, being integrated with nature, and sense of responsibility. In the interviews conducted with children, when asked the question "Do you love the environment? Why?" children responded with "I love the environment because; we play games, have picnics, and there are animals in the environment." This inference might suggest that children are willing to spend time outdoors and play games. Children may have thought this way because they can play original games without restrictions in the environment and feel free in the environment/nature. Parallel to the findings of the study, Ewert et al. (2005) stated that children mentioned spending time outside for fun and to fill their leisure time. The interviews conducted about children's drawings largely provided insights into children's enthusiasms and interests. For example, child D_{10} stated the reason for loving the environment as "because I love growing flowers." Most children stated that they love the environment because they can play games in it. Lucas and Dyment (2010) concluded that children aged 5-12 prefer green and natural areas for playing. Children's freedom in nature, nature providing resources for them to play, and nature being able to respond to individual differences may have influenced their ideas. When adults listen to children's narratives about their drawings, they can learn about the child's culture, perspective, interests, and enthusiasms (Coates and Coates, 2006). In the study, while children largely stated "spending time outdoors/in nature/outside" as the reason for loving the environment, there was no relationship found between children's emotional attachments to the environment and their perceptions of the environment. This is because the reasons for loving the environment of children in both the experimental and control groups remained unchanged in the pre- and post-interviews, sticking to the same themes.

In the pre-tests, children cited spending time outdoors and playing outside as reasons for loving the environment. Similarly, in the study conducted by Cengizoğlu et al. (2022), children reflected the environment as a place to enjoy life in their drawings. Children stated that they loved the environment because they could have a good time and enjoyed the outdoors during the pre-test interviews. This finding is supported by the study of Ojala (2018): In the study, children's desires and ideas regarding environmental education in the forest were obtained, and the children requested an increase in the time spent in the forest. In the relevant research, children described the forest as a peaceful place (Ojala, 2018). The reason for this could be that in nature, children can use all their senses (Levonen, 2009). How individuals perceive themselves is closely related to the emotions and thoughts aroused by stimuli in the environment. The drawings made by children are a form of art. Art can be considered as the expression of knowledge acquired through sensation (Yeşilyurt et al., 2020).

Barrable (2019) stated that environmental education contributes to children's connection with nature for sustainability and introduced a pedagogy called connection pedagogy, which includes various guidelines for this purpose. One of these guidelines is 'developing compassion for non-humans,' which was included in the study. In the study, children cited 'feeding animals' as a reason for loving the environment. This may indicate that children harbor compassion for living beings in the environment. However, the responses of children to this question did not change between the pre and post-tests. The fact that children in the research sample reside in a green, nature-immersed environment may have influenced their thinking in this way and contributed to the consistency of their ideas even after the education provided.

According to Tahta (2010), science activities should not teach children concepts but should rather enable them to construct their own concepts. Literary texts contain values related to life and humanity and contribute to the development of the individual's affective behaviors in communication (Sever et al., 2011). In the activities implemented within the scope of the study, the content of picture books was reinforced with science activities, focusing on enabling children to establish a connection with daily life through activities. The fact that the experimental group drew figures related to daily life in their post-test drawings can be seen as a sign that children discover knowledge and form their own concepts. It can be said that integrated Turkish and science activities enhance children's ability to create concepts and their environmental perception. In a study conducted by Kurt Gökçeli (2022), it was stated that an environmental education program integrated with language activities has a positive effect on children's environmental awareness. Considering that an enhanced environmental perception will also lead to a positive attitude and awareness towards the environment, it is considered important to determine and improve children's environmental perception.

In early years, children perceive the environment as a place, while in later years, they perceive the environment as an interactive space where living and non-living entities interact (Loughland et al., 2002). The responses of children to the question "What living and non-living things are there in your environment?" in interviews are closely related to the entities present in the environment where the interview is conducted. In this context, the findings of the study align with the findings of Loughland et al.'s study.

Considering that integrated Turkish and science activities in the research have contributed to the development of children's environmental perception, it can be said that the concept of the environment can be imparted to children through illustrated children's books. Hansson et al. (2020) also concluded in their study with young children that book conversations are a good tool for imparting the nature of science to children. In this context, the study is parallel to the literature. Gülay and Ekici (2010) have advocated for enriching environmental education activities by bringing together various branches and disciplines of science. In the research, Turkish and science disciplines were integrated within the context of environmental education to enhance children's environmental perception.

Literary texts enable children to develop their unique emotions, thoughts, behaviors, and perspectives. This can be effectively used as a tool to give children a sense of responsibility in thinking (Sever et al., 2011). The increase in tree figures in the drawings of the experimental group in the post-tests of the study may indicate that children are paying attention to the tree element in the

environment. It can be said that integrated Turkish and science activities are effective in increasing children's interest in trees. In other studies, it has been concluded that stories are an effective tool for conveying and highlighting the importance of trees to children, and an increase in children's willingness to participate in tree planting activities has been observed after reading stories (Hadzigeorgiou et al., 2011). In the study, the experimental group drawing the roots of the trees in their post-test drawings and changing the drawing of the tree based on whether the environment is dirty or clean may indicate that children have reached a certain level of awareness regarding trees.

In environmental education, rather than simply imparting existing knowledge to children, environments should be created where children can develop themselves based on their potentials (Alerby, 2000). In the conducted study, attempts were made to enhance children's environmental perception using picture books. Children were given the opportunity to examine picture books before and after reading, enabling them to follow the content through pictures. Indeed, the visuals and texts in picture books help develop children's visual literacy (Batič, 2021). Science activities related to the content have contributed to children's development in terms of their environmental perception.

Alerby (2000) found in his study that young children describe and draw their immediate surroundings as their environment. The conducted study is consistent with this finding. When asked the question "What living and non-living things are there in the environment?" to both the experimental and control groups, children provided examples from the objects in the classroom where the interviews were conducted.

During the activity implementations in the study, it was observed that some children initially showed little interest in the books being read but became more involved in the science activity part of the process. While each discipline has its own unique characteristics, incorporating different disciplines into educational environments is thought to better accommodate children's preferences stemming from individual differences in activities. In this context, integrated activities are considered an effective type of activity to attract children's interest (Benli et al., 2022). The enriched structure of integrated activities can be used as an effective method to involve all children in the activities. Thus, each child can find a piece of themselves in the activity. It can be said that within the scope of the research, integrated activities type is effective in attracting the attention of children.

The integrated Turkish and science activities in the study successfully captured the interest of the children, who actively participated in the activities. This outcome can be attributed to the designed activities emphasizing various aspects of the environmental concept. Providing environmental education to children with an interdisciplinary approach allows the advantages of the disciplines used to be utilized (Sever & Yalçınkaya, 2018). The increase in shades of blue in the post-tests of the children in the experimental group may indicate that they embraced the activities and acquired the gains and indicators in the activities. The use of different methods in environmental education attracts children's interest and increases their willingness to participate in educational environments (Ojala, 2018). Research has shown that integrated Turkish and science activities are effective in the development of preschool children in various science topics (Yıldız et al., 2019). In Doğanay Koç's (2022) study, it was concluded that integrating book reading activities with science activities enhances children's problem-solving behaviors, thereby making them more environmentally aware. Similarly, in the conducted research, integrated Turkish and science activities helped children develop their environmental perceptions. This result may be related to the closeness of science activities to real life and the ability of life experiences in children's books to impart a sense of reality to children (Koç, 2021). The inclusion of events from real life in the drawings of the children in the experimental group in their post-tests and their ability to express their drawings better can be considered as indicators of this situation.

Environmental education is known to be an opportunity to achieve sustainable development goals (Tyyskä, 2018; Seppälä, 2022). In the conducted research, it can be said that environmental education has achieved its goals in the context of sustainable development for children. The ability of the children in the experimental group to distinguish between dirty and clean environments and to draw pictures considering living elements in the environment after the implemented activities is indicative of this situation. However, Coquidé (2019) argued that providing education for sustainable development at an early age is not a good idea because preschool children may not have reached the necessary level of cognitive development. This idea differs from the results of the conducted research. Because the environmental education provided in the study was prepared according to the developmental level of the children, and the expected development was achieved in the experimental group as a result of the research.

While reading books appeals to children during early childhood environmental and sustainable development education, their concentration may sometimes be insufficient (Lukkarinen & Peltola, 2018). Therefore, it is believed that supplementing and integrating children's books with different activities will increase their use in early childhood environmental education. The results of the research support this idea.

When planning activities for early childhood, it is important to consider a rich language environment, richness in expressions, the child and their environment, environmental exploration-learning, and individual differences in the child's development (Seppälä, 2022). It is observed that these learning areas are present in the structure of integrated Turkish and science activities and that these activities are effective in the development of children's environmental perceptions. Additionally, the enrichment of the content of the responses given by the children in the experimental group in the final interviews can be considered as an indicator of this situation. For example, while the child with the code D_{10} answered "I don't know" to the question "What is the environment?" in the initial interviews, they answered the same question in the final interviews by saying "It's flowers, trees. It's where animals are."

The diversification of the words used by the children in the experimental group when describing their final drawings also indicates that integrated activities affect children's learning areas. Dowdall et al. (2020) argued in their study that book reading activities have insufficient short-term effects on children's language development. In this context, the research contradicts the literature. Because the development of expressive language skills of the children in the experimental group is evident from the answers they gave to interview questions in their final tests.

During the preschool period, stories activate children's cognitive structures and influence their perception processes (Ahi et al., 2014). In the research, the plotlines in the picture books used were integrated with science activities to enhance this aspect of picture books. It is thought that the proximity of the topics in picture books to real life facilitated the integration of activities. The fact that the children in the experimental group reached darker shades of blue in the post-test indicates that integrated Turkish and science activities increased children's environmental perceptions. Therefore, teachers are expected to support the stories in the classroom picture books with different activities after reading (Özdemir et al., 2019).

It is noteworthy that children in both the experimental and control groups categorized trees as lifeless in the pre-tests. However, after the Turkish and science activities applied to the experimental group, it was observed that they categorized trees in the living category. The statement of child D_2, "trees cannot walk or talk, so they are lifeless," and the statement of child K_7 in the post-test, "those that walk are alive," may stem from children associating the concept of living with the action of movement. This finding aligns with the study conducted by Villarroel and Infante (2014), where children struggled to categorize trees as living, citing reasons such as the slow growth and sturdiness of trees. The study thus parallels the existing literature in this regard.

The fact that children in the experimental group categorized the tree as lifeless in the pre-tests and used the sun figure less in their pre-test drawings may be associated. Children coded as D_1, D_2, D_3, and D_6 categorized the tree as lifeless in the pre-test, while in the post-test, they categorized the tree as alive and also drew the sun figure in their pictures. Similarly, the fact that children coded as D_2, D_3, D_4, D_5, D_8, and D_{10} drew rain and cloud figures in their post-test drawings may be associated with seeing trees in the alive category. Drawing sun and rain/cloud figures in their pictures simultaneously also coincides with the findings of Villarroel and Infante (2014). In the relevant study, children who were able to make the living-nonliving distinction well and were aware that plants were alive included more sun figures in their pictures.

Shepardson et al. (2007) state that as children gain experience with educational environments, their knowledge increases, and they form different mental models about the environment. The integrated activities implemented within the scope of the study also provided positive changes in children's mental models.

In the study, the increase in environmental perception among children in the experimental group can be explained by the integrated Turkish and science activities. It is believed that the integration of picture books used in the activities with different disciplines played a role in this increase. Muthukrishnan (2019) also found positive outcomes of using picture books in environmental education with first-grade students. In this context, it is suggested in the study to integrate picture books into the curriculum to create a versatile environment when using picture books in environmental education. Güzelyurt and Özkan (2019) argue that in environmental education given using children's books, beyond simply conveying examples related to the topic covered in the book, the education should be made practical to make it a lifestyle for children. When providing environmental education in the preschool period using picture books, the positive feedback of using picture books can also be understood by children grasping the environmental-themed messages in the picture books and incorporating these messages into their drawings (Hsiao and Chen, 2015).

The integrated activities implemented in the experimental group in the study enabled children to express their drawings better in the post-test. While describing their drawings in the pre-test, children used shorter sentences, whereas in the post-test, their expressions about the drawings were clearer and more explicit. Additionally, children in the experimental group were able to explain the connections between figures more easily in the post-test. For example, child D_1, who drew independent figures of a house and a rabbit in the pre-test, established connections between humans and flowers in the post-test, depicting the effect of humans on flowers by illustrating "humans watering the flowers and the flower growing." Presenting the curriculum topics in integrated form in preschool education can lead to more realistic results regarding children's development while also promoting development in various areas for children (Öztürk Yılmaztekin and Tantekin Erden, 2017). Evaluated within this framework, it can be said that children in the experimental group showed improvement in language and cognitive development areas after the implementation of integrated activities. The targeted achievements and indicators related to cognitive, socio-emotional, language, motor development areas, and self-care skills were largely acquired by children through the implemented activities. Considering the drawings children made, their narrative descriptions of the drawings, and their performance during the activities, this conclusion can be drawn. The multidimensionality of the environmental subject enables children to develop in various areas through the implementation of environmental education (Séguélas, 2020).

The structure of environmental education, which can bring together different disciplines and reflect this feature in educational environments, also positively influences the outcomes of environmental education (Staples et al., 2019). In the conducted study, the integration of Turkish and science activities as different disciplines in the experimental group led to a difference in the post-tests compared to their pre-tests. The lack of difference in the post-tests compared to the pre-tests in the control group may emphasize the importance of integrating different disciplines in environmental education. Arredondo Velázquez et al. (2018) concluded in their study with elementary school students that textbooks are not sufficient to teach environmental issues to children; it is necessary for the connection and interaction with nature to be strong in order to impart environmental gains to

children. In this context, integrating Turkish activities with science activities in educational environments can be considered as a good method for imparting environmental topics to children. Implementing this proposed method in different grade levels has yielded positive results, and in the experimental group of the relevant study, scientific literacy skills have improved (Yuliana et al., 2021).

CONCLUSION AND RECOMMENDATIONS

Using the flexible structure of the preschool program, environmental education can be conducted through various activities (Gülay & Ekici, 2010). This research emphasizes the importance of providing environmental education by bringing together different types of activities rather than drawing a boundary for environmental education. The environment is life itself. It is clear that setting such a boundary is impossible and would not be beneficial.

Environment is a continuous practice where values, facts, and principles governing human life evolve (Epiquén et al., 2019). The continuity of environmental education necessitates its continuation at home. The inability to elevate the environmental awareness acquired by children through the environmental education given in the study may be due to the lack of parental support in environmental education. The lack of involvement of parents in these educations may hinder the continuity of these factors (such as security factor) for children and parents (Fisman, 2005).

Despite the children in the research sample residing in a district closely connected with nature, their limited inclusion of natural environment-related facts, events, and factors in their pre-test drawings may indicate that children are not fully aware of their natural environments. Similarly, Sanchis et al. (2022) concluded that children have trouble perceiving natural areas in their immediate surroundings as part of the environment. In light of this assessment, it is recommended to create opportunities for children to recognize natural areas in their environment and spend more time in these natural areas.

Based on the results obtained within the scope of the research, the following recommendations have been proposed:

- Environmental-themed picture books should be included in the environmental education process, and children should be given the opportunity to examine these books and imitate reading through the books.
- Picture books for children can be integrated with various activities, not just read.
- The picture books read can be reinforced by associating them with daily life.
- The contributions of picture books for children can be conveyed to parents through family education sessions, raising awareness among families about children's picture books.
- Environmental-themed picture books can be added to classroom libraries for use in environmental education.
- Studies can be conducted to determine the changes in environmental awareness according to age and gender variables.

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Statements of publication ethics

We hereby declare that the study has not unethical issues and that research and publication ethics have been observed carefully.

Researchers' contribution rate

The study was conducted and reported with equal collaboration of the researchers.

Ethics Committee Approval Information

In this study, the ethics committee permission was obtained from Kastamonu University Social and Human Sciences Ethics Committee with the decision dated 07.11.2022 and numbered 20.

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