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Examining the Common Exam Scores of 5th Grade Students in Mathematics and Turkish Lessons

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Abstract: Together with the in-class course processes, extracurricular activities somehow affect students' success in exams. In this study, it was investigated how the students' success in common mathematics and Turkish exams varies according to the use of technology in their lessons, the frequency of being on the board in the mathematics lesson, the status of alternative activities in Turkish lesson, their participation in support and training courses, and their participation in extracurricular activities. In addition, it was also examined whether the relationship between mathematics and Turkish Exam scores differs according to the educational districts of the schools. The population of the study is all of the approximately 60 thousand 5th grade students in Gaziantep. The sample consists of 14 793 students. Pearson correlation coefficients were calculated in the analysis of the data. In order to determine whether there is any differentiation between the obtained correlation coefficients, a z-test was performed for each region. ANOVA test was used for research questions (2-5) since there were more than two independent groups. As the post hoc test, the selection was made considering the homogeneity of the group and the equality of the sample. As there are 2 independent groups for the 6th research question, independent samples t-test was used. According to the results of the study, when the correlation values are examined according to education regions, there is a moderate and statistically significant correlation between mathematics and Turkish course achievement in all districts and these correlation values vary according to education regions. Students' success in common exams varies according to the use of technology in the classroom, the frequency of being on the blackboard, alternative activities, participation in supporting and training courses, and participation in extracurricular activities.

Keywords Mathematics Common Exam, Turkish Common Exam, Use of Technology, Being on the Board, Extracurricular Activities, Alternative Teaching Methods

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Introduction

There are many factors such as school, personal feature, extra curriculum activities and parental support that affect students' course and exam success. The factors affecting learning are very important both in the education system and in facilitating the daily lives of learners. Learning new knowledge and using the learned knowledge are also very important in terms of mathematics, which is always an indispensable part of daily life and even education systems. Mathematics education is always considered an important area in education systems. Many students still regard mathematics as a difficult subject to 0978understand and learn (Medyasari et al., 2021), despite the fact that its teaching has always been given great importance. At an early age, mathematics appears abstract to children (Verschaffel et al., 2020); those who learn with the dread of the unknown are terrified of mathematics, and this fear persists into adulthood. Students' performance in Turkish classes may have an impact on their performance in other subjects (Doğan & Sevindik, 2011). The questions developed to assess other courses' knowledge necessitate first and foremost that the information be read and comprehended, and then that the information be conveyed in writing or verbally in accordance with what has been learned. A student who is unable to read and comprehend the question cannot be expected to perform well on the test.

Literature Review

The Relationship Between Turkish and Mathematics Exam Success and the Effect of the School Environment

Among the factors that affect the success of students, many variables such as reading comprehension, quality of education, participation in class, teachers' use of alternative learning strategies in class can be mentioned. According to the results of research conducted at diffrent educational levels, there is a significant relationship between students' Mathematics and Turkish test nets and course success (Doğan & Sevindik, 2011; Güneyli et al., 2010; Tatar & Soylu, 2006). Students who only have difficulties in mathematics lessons perform better in verbal problems than students who have difficulties in mathematics and reading (Jordan & Hanich, 2000; Jordan et al., 2002). In other words, it is emphasized that students who have problems in reading and understanding also have difficulties in learning mathematics. Reading comprehension is related to success in Turkish and Mathematics classes (Yılmaz, 2011). According to the results of the study conducted by Güleç and Alkış (2003), there is a high level of relationship between mathematics lesson’s success and Turkish lesson’s success, even though it differs according to grade levels in primary school classes.

According to Güvendir (2014), the characteristics of the school that the student attends affect the Turkish course success of the students. The socio-economic status of the students' environment also affect their success. In this context, the question of whether the school environment that the students attend affects the level of the relationship between mathematics and Turkish achievement comes to the fore.

The Effect of In-Class Education Processes on Mathematics and Turkish Course Success

Enriching the way teachers teach is thought to be a factor in how well students learn and how well they do. (Şahan, 2008). The use of technology is one of the ways to enrich the course processes (Demir, 2011). Students are more motivated towards the lesson when technology is

used in the instruction (Gündüz & Çelik, 2015). According to the results of studies done at different levels of education, students who use technology in their classes do better (Altunbay & Bıçak, 2018; Çetin & Mirasyedioğlu, 2019; Yıldırım & Demir, 2013; Yorgancı & Terzioğlu, 2013).

Another factor affecting course success is the active participation of students in the course (Çelik et al., 2018). One of the indicators of students' interaction with the lesson is that the students being on the blackboard. Students are more motivated to sit on the blackboard in the lessons they love (Seven & Engin, 2010).

Another factor is using alternative teaching methods (Tertemiz, 2004). For example, the use of digital stories in Turkish lessons positively affects students' academic success (Özerbaş & Öztürk, 2017). In the Turkish lesson, which is an alternative activity, the success of the students was affected by the lessons taught with games (Boz, 2019). In the study conducted by Ede (2012), it was determined that teaching with the mind mapping technique was more effective than the traditional method. Teaching with the mind mapping technique has proven to be more effective than the traditional method on students' recall levels. The increase in students' achievement levels was clearly observed with the mind mapping technique (Ede, 2012).

Attendance at Support Training Courses

The extent to which students' attendance in supplemental courses has an impact on their academic achievement is one of the key topics in education. MoNE offers free and voluntary weekend Support Training Courses for students. It has been claimed that in the Support Training Courses, the topics covered in courses, as well as the activities to solve the exam questions, are mostly repeated (Canpolat & Köçer, 2017; Timur et al., 2020). According to the findings of the study performed by Ünsal and Korkmaz (2016), tests books and tests are utilized as teaching materials in these courses. . Studies (Canpolat & Köçer, 2017; Timur et al., 2020; Ünsal & Korkmaz, 2016) have found that students who participate in Support Training Courses achieve higher levels of academic achievement than those who do not participate.

Türküresin (2018) found that, according to the findings of a study in which students' perspectives on support training courses were examined, their belief that the courses are useful and important is higher than their belief in the interest and motivation that they demonstrate toward the courses. This finding was supported by the findings of another study in which students' perspectives on support training courses were examined. Generally, students and teachers are favorable about the overall appraisal of education support and training courses, believing that these courses significantly enhance student enthusiasm and course performance (Sezgin Nartgün & Dilekçi, 2016).

Participation in Extracurricular Activities

Extracurricular activities are opportunities provided to students by their schools that allow them to participate in a hands-on way in their learning (Brown & Evans, 2002). Stearns and Glennie (2010) define extracurricular activities as those things that students choose to participate in outside of the classroom to spend their time and energy. In the literature, it is said that participation in extracurricular activities at school produces a variety of pleasing outcomes for the kids who participate. Students' academic success has been shown to be positively impacted by extracurricular activities, according to research (Sarı, 2012). In contrast, there have been studies (Melman et al., 2007) that have demonstrated that it can have a detrimental impact

on academic success. According to the findings of a study conducted by Özkan (2020), which examined the success of students who participated in PISA-2015, students who participate in extracurricular activities have lower mathematics and reading skills and test scores than students who do not participate in extracurricular activities. It was discovered that there was a statistically significant difference between the averages of students who participated in extracurricular activities and those who did not. PISA-2015 scale averages of 500 or higher in mathematics, reading skills, and science are significantly higher in students who participate in extracurricular activities than in students who do not. Those who participate in extracurricular activities have significantly higher success scores than those who do not. Students who participated in extracurricular activities had significantly lower success scores than those who did not (Özkan, 2020). This was true among students who scored less than 500 on the PISA-2015 scale, which is the average score on the scale, and who were considered unsuccessful within the scope of this study. A research done by (Görkem, 2012) found that students who perform well in Turkish classes had the greatest average of pleasant "situations" when they are engaged in activities. Students that do poorly have the lowest grade point average. In the case of mathematics course success, a similar pattern was seen.

The purpose of this study is investigating the link between students' performance on Turkish and mathematics exams, as well as how their performance varies as a result of various variables. Specifically, responses to the following research topics will be sought in this context:

1- Does the correlation between the students' scores on the Mathematics and Turkish Exams change depending on where the schools are located in respect to the education district?

2- Do students' grades on the Mathematics and Turkish exams change depending on whether or not technology is used in their lessons?

3- Does the mathematics test score of the students differ according to the frequency of being on the blackboard in the mathematics lesson?

4- Do the students' Turkish exam grades change depending on whether or not they participated in alternative activities during the Turkish lesson?

5- Do students' grades on mathematics and Turkish exams change depending on whether or not they have participated in support training courses?

6- Do students' performance on mathematics and Turkish exams change depending on whether or not they participate in extracurricular activities?

Method

In the research, the quantitative approach is preferred. Correlational research design is used for answer research questions. The research looked at how several variables affected the results of Turkish and mathematics examinations. The study also looked at the relationship between Turkish and mathematics course performance changes.

Population and Sample

Students in the 5th grade in Gaziantep are the study's sample population that is around 60 thousand. Each education region's student population is counted to establish the size of the sample that will be used. In order to include schools in the sample, they were chosen at random

from the education district. Naturally, all students were taken from all of the schools that were selected for the sample. The total number of students are 14793.

Data Collection Tools

The data collection tools are the survey and the common test results of the Mathematics and Turkish courses offered by the Gaziantep Provincial Directorate of National Education in the 2nd Term of the 2018-2019 academic year. The common exam was offered to all pupils in chosen schools, taking into consideration the number of students from each district and education area throughout the province. In the common exam, there are multiple-choice20 questions for each lesson. The teachers employed by the schools where the application would be submitted were first requested to develop questions relevant to the objectives in order to establish a questions pool. 10 teachers and assessments expertise worked together to check and select questions. Sixtieth-grade students from a school that was not selected for the main application were asked 80 questions for the pilot study. Item analyses of the questions were performed. Twenty questions were chosen on the basis of item discrimination and difficulty indices. Also, the survey is designed to determine the views of the participants on the teaching and learning process. To check the comprehensibility, it was applied to the students who would not be participating in the study.

Data analysis

First of all, it was established if the Mathematics and Turkish scores in each subgroup had a normal distribution. The kurtosis and skewness coefficients were evaluated for each subgroup. The kurtosis and skewness coefficients in all subgroups range from -1.5 to +1.5. Then histogram plots were analyzed. According to the evaluation results, the distribution of test scores was accepted as having a normal distribution (DeCarlo, 1997; Hopkins & Weeks, 1990). Therefore, it was decided to utilize parametric testing. In the first research question, the education areas of the schools were defined according to the service area durations. It was examined if there was a linear correlation between Mathematics and Turkish scores according to each education district by generating a scatter plot. Pearson correlation coefficients were then computed. The z-test was done for each location to evaluate whether there was a diffrences between the obtained correlation coefficients (https://www.psychometrica.de/correlation.html). For 2.-5. the research questions, ANOVA test was done because there were more than two independent groups. As the pos hoc test, the selection was done considering the homogeneity of the group and the equality of the sample. For the 6th research question, the independent sample t-test was used because there were 2 independent groups.

Results

Findings Related to the First Research Question

Table 1. Mathematics Turkish Means and Coefficient Values by Education Region

Education Region	N	$\bar{x}_{Math}$	sd_{Math}	$\bar{x}_{Turkish}$	$Sd_{Turkish}$	r
1	3341	13.47	4.80	14.78	4.33	0.732**
2	138	8.82	4.69	9.86	4.11	0.619**

3	123	10.33	4.44	11.18	4.47	0.727**
4	8876	9.24	4.68	10.63	4.78	0.722**
5	1852	8.69	4.51	9.87	4.55	0.675**
6	463	8.35	4.20	9.87	4.59	0.706**

When the correlation values are analyzed according to the education district, there is a modest and statistically significant association between mathematics and Turkish course success in all regions. Educational regions were defined according to the socioeconomic standing of the schools. It refers to the service area utilized in the computation of teachers' service scores. The lowest correlation observed in the 2nd and 5th Education areas. The z-test was used to examine if the correlation values in the education regions differed.

Table 2. Comparison of Mathematics Turkish Correlation Values by Education Regions

Education Regions	1	2	3	4	5
2	2.388- 0.008*				
3	0.115- 0.454	-1.586- 0.056			
4	1.045- 0.148	-2.173- 0.015*	0.115- 0.454		
5	3.903 -0.000*	-1.082- 0.14	1.088- 0.138	3.596-0.000*	
6	1.083-0.139	-1.591- 0.056	0.421- 0.337	0.683- 0.247	-1.138-0.128

Notes: * statistically significant at 0.005 level.

When examining the correlation values according to the education district, the 1st education district has a higher correlation coefficient than the 2nd and 5th education district. Similarly, the 4th Education district has a higher correlation coefficient than the 2nd and 5th Education districts.

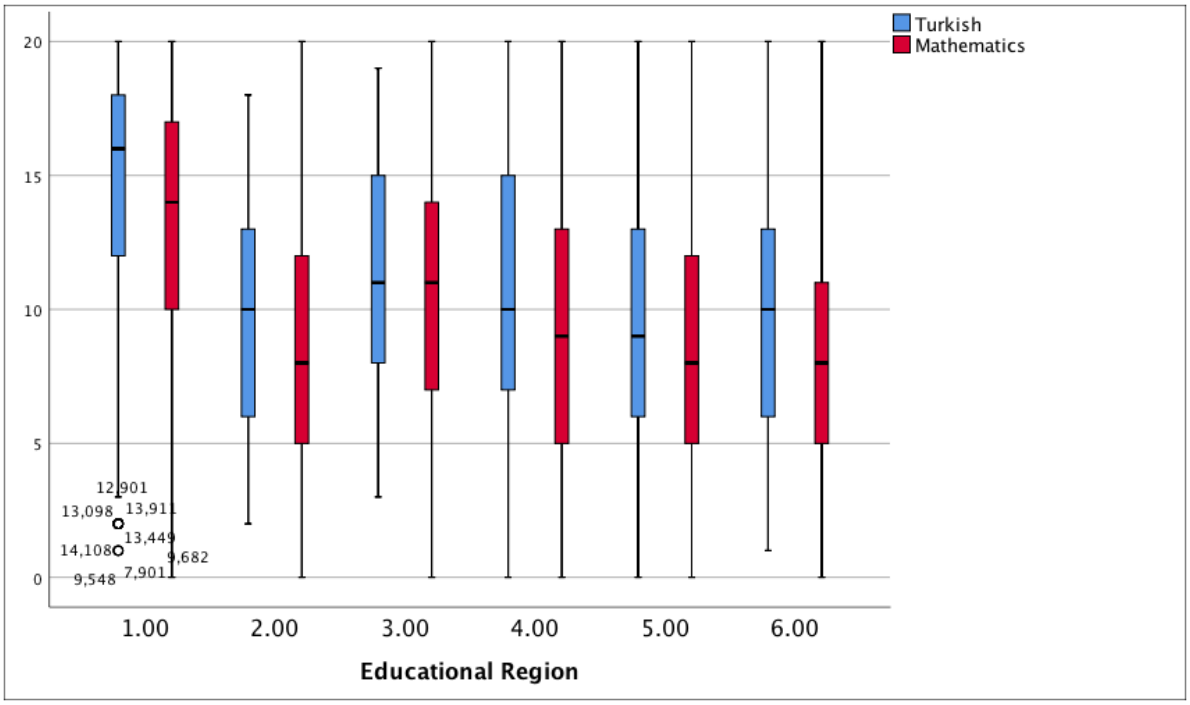

Figure 1. Box Plot of Turkish and Mathematics Lessons by Districts

When the box plots are examined for the education areas, the success of Turkish and Mathematics courses in the 1st Education district is higher and closer to each other than the other districts. In 2. education district, the scores are more differentiated from each other. There are also students in the first education district who cannot exhibit sufficient performance in Turkish courses. But these pupils are seen as outliers.

Findings Related to the Second Research Question

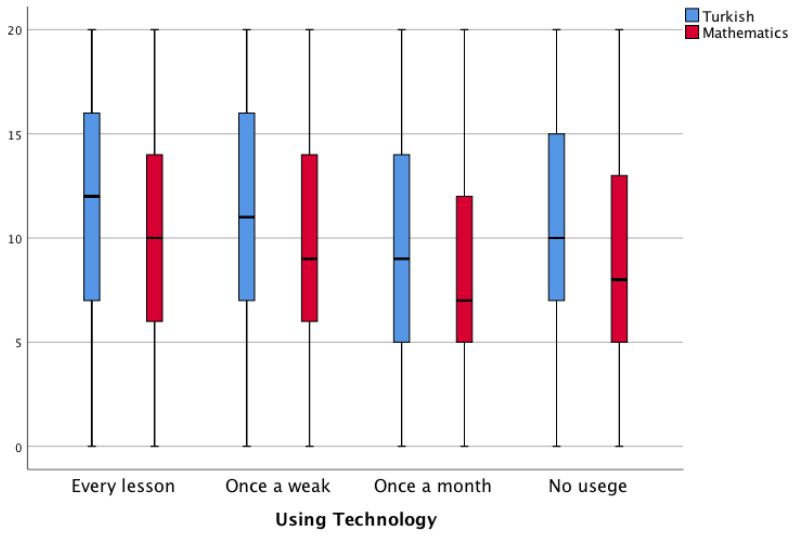

Figure 2. Turkish Mathematics Achievement Box Plot by Technology Use

When the box plot based on the usage of technology in Turkish and Mathematics classes is analyzed, the scores in each group range between 0 to 20. Within each group, it is evident that average of Turkish scores are higher than average of mathematics scores. The item to emphasize is that the average of classes with no technology usage is higher than the average of classes with technology use once a month.

Table 3. Turkish and Mathematics Achievements by Frequency of Technology Use in Classes

		N	$\overline{x}$	sd
Turkish	Every lesson	8358	11.80	4.98
	Once a week	4168	11.28	4.91
	Once a month	584	9.65	5.03
	No usage	1680	10.74	4.93
	Total	14790	11.44	4.98
Mathematics	Every lesson	8358	10.43	5.06
	Once a week	4168	9.96	4.89
	Once a month	584	8.68	4.96
	No usage	1680	9.35	5.00
	Total	14790	10.11	5.02

When the scores averages are examined according to the use of technology, the lowest average in the Turkish lesson is the group used once a month, while the highest average is in the classes where each lesson is used. A similar situation occurred in the mathematics lesson. The ANOVA test was performed to determine the statistical significance of the differentiation.

Table 4. Comparison of Turkish and Mathematics Achievements by Frequency of Technology Use in Lessons

		Sum of Squares	Df	Mean Square	F	p	Eta-square
Turkish	Between Groups	3866.433	3	1288.811	52.427	0.000	0.011
	Within Groups	363485.935	14786	24.583			
	Total	367352.369	14789				
Mathematics	Between Groups	3115.985	3	1038.662	41.529	0.000	0.008
	Within Groups	369808.141	14786	25.011			
	Total	372924.126	14789				

According to the ANOVA test results, the difference between the averages of the groups is statistically significant for both courses. According to the results of the Scheffe (the sample size not equal, the variance equal) test performed to determine which groups the differentiation is in, the differentiation is between all groups. When the effect size is examined, it has a small effect size in both the lessons.

Findings Regarding the Third Research Question

Table 5. Frequency of Being on the blackboard in Mathematics Lesson

		N	$\bar{x}$	sd
Mathematics	Never being	919	7.37	4.29
	1-2 times a week	4544	8.96	4.63
	3-4 times a week	4985	10.36	4.91
	5 times a week or more	4308	11.65	5.15
	Total	14756	10.12	5.02

When the mathematics course averages are examined according to being on the blackboard, the average success of the students increased as frequency of being on the blackboard increased. The ANOVA test was performed to determine the statistical significance of the differentiation.

Table 6. Comparison of Mathematics Achievement by Being on the Blackboard in Mathematics Lesson

	Sum of Squares	df	Mean Square	F	p	Eta-square
Between Groups	23322.011	3	7774.004	329.215	0.000	0.063
Within Groups	348350.544	14752	23.614			
Total	371672.555	14755				

According to the ANOVA test results, the difference between the averages of the groups is at each statistical significance level. According to the Dunnett C (the sample size not equal, the variance not equal) test performed to determine which groups the differentiation is in, the differentiation is between all groups. When the effect size is examined, it has a small effect size in both courses.

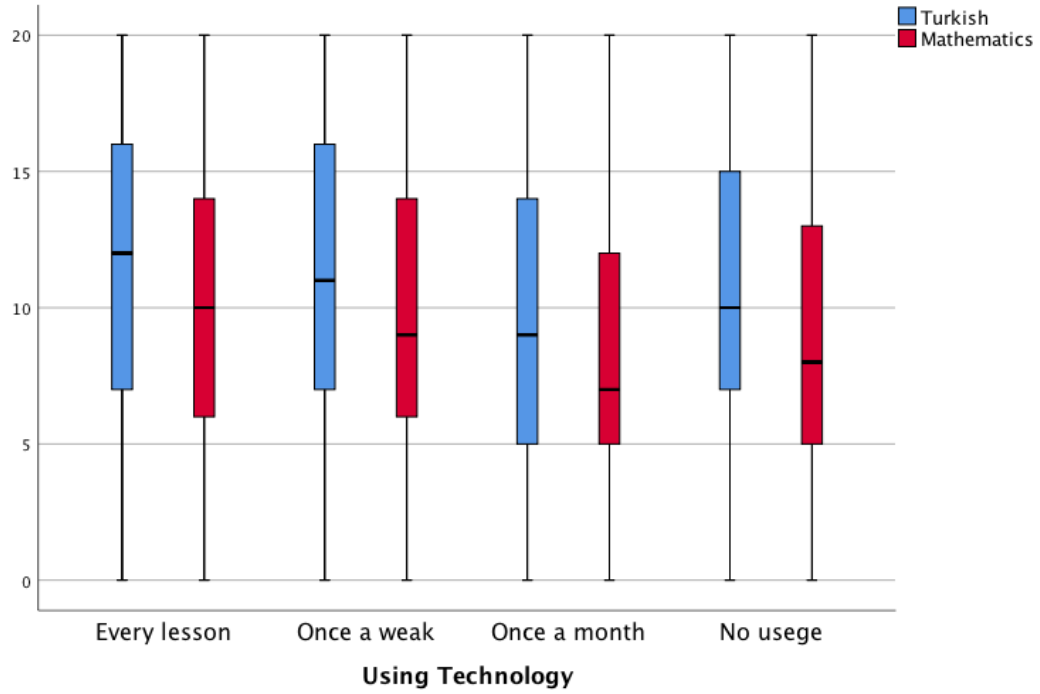

Figure 3. Box Plots of Mathematics Achievement by Frequency of Boarding in Mathematics Lessons

When the box plot is examined according to being on the blackboard, it is seen that some students are successful among the students who have never been on the blackboard. These students were perceived as outliers. There is a significant increase between students being on the blackboard and their success in mathematics courses.

Findings Regarding the Fourth Research Question

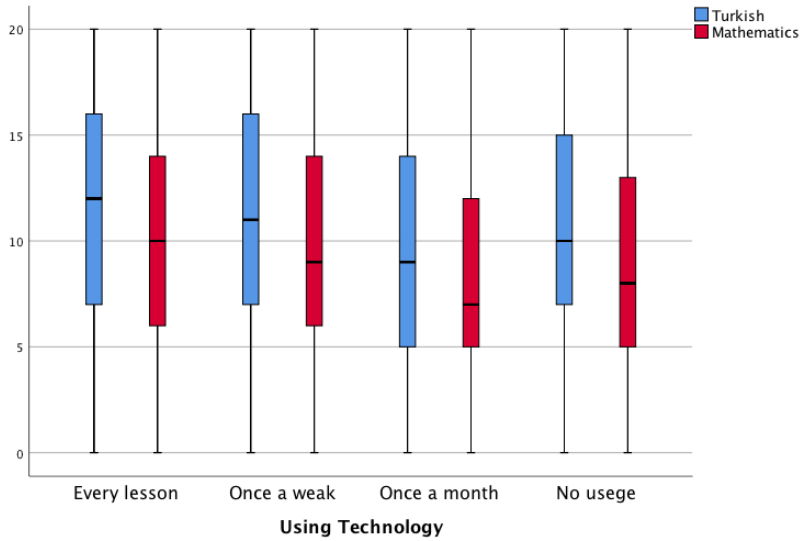

Figure 4. Turkish Exam Success Box Plot According to the Status of Alternative Activities

Table 7. Turkish Exam Success According to the Status of Alternative Activities

	N	$\overline{x}$	sd
Yes	3958	11.67	5.05
Sometimes	7040	11.62	4.90
No	3652	10.99	5.00
Total	14650	11.48	4.97

When Figure 5 and Table 9 are evaluated together, the averages of the students who participated in the activities are the highest. On the other hand, the class average in which alternative activities are not performed is lower. The ANOVA test was performed to determine the statistical significance of the differentiation.

Table 8. Turkish Exam Success Comparison According to the Status of Alternative Activities

	Sum of Squares	df	Mean Square	F	p	Eta-square
Between Groups	1152.090	2	576.045	23.360	0.000	0.003
Within Groups	361188.001	14647	24.660			
Total	362340.090	14649				

According to the ANOVA test results, the difference between the averages of the groups is at each statistical significance level. According to the result of Dunnett C (The sample size not equal, the variance not equal) test performed to determine which groups the differentiation is in, the average of those in the “No” groups is lower. In terms of effect size, it is at the small effect level.

Findings Related to the Fifth Research Question

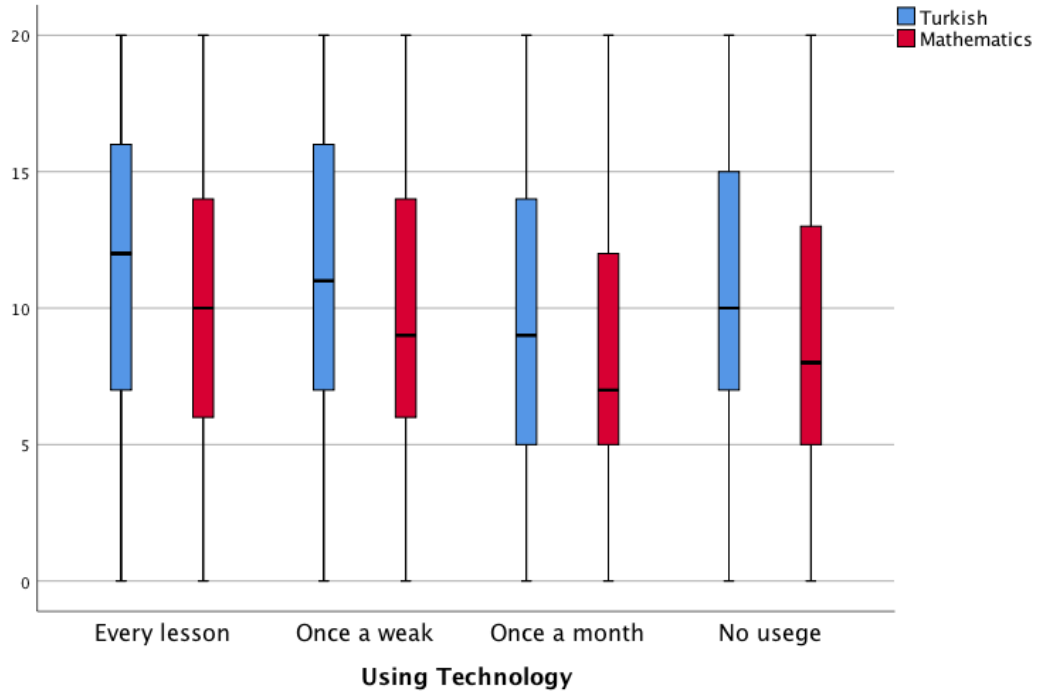

Figure 5. Box Plot by Regular Attendance to Support Courses

Table 9. Regular Attendance to Support Courses

		N	$\bar{x}$	sd
Turkish	Yes	4452	11.38	5.16
	Mostly	5494	11.85	4.86
	No	4708	11.13	4.89
	Total	14654	11.48	4.97
Mathematics	Yes	4452	10.24	5.19
	Mostly	5494	10.43	4.92
	No	4708	9.70	4.91
	Total	14654	10.14	5.01

When the course averages are examined according to the participation in support and training courses, the success of the students who attend the courses is higher than those who do not attend the courses. The ANOVA test was performed to determine the statistical significance of the differentiation.

Table 10. Comparison of Course Achievements by Regular Attendance to Support Courses

		Sum of Squares	df	Mean Square	F	p	Eta-square
Turkish	Between Groups	1373.059	2	686.530	27.881	0.000	0.004
	Within Groups	360763.755	14651	24.624			
	Total	362136.815	14653				
Mathematics	Between Groups	1415.716	2	707.858	28.290	0.000	0.004
	Within Groups	366594.479	14651	25.022			
	Total	368010.195	14653				

According to the ANOVA test results, the difference between the averages of the groups is statistically significant for both courses. According to the Dunnett C (The sample size not equal, the variance not equal) test performed to determine which groups the differentiation is in, the differentiation in Turkish lesson is between all groups. In the Mathematics lesson, the no attending group is lower than the other two groups. According to the effect size, it is at the level of small effect in both courses.

Findings Related to the Sixth Research Question

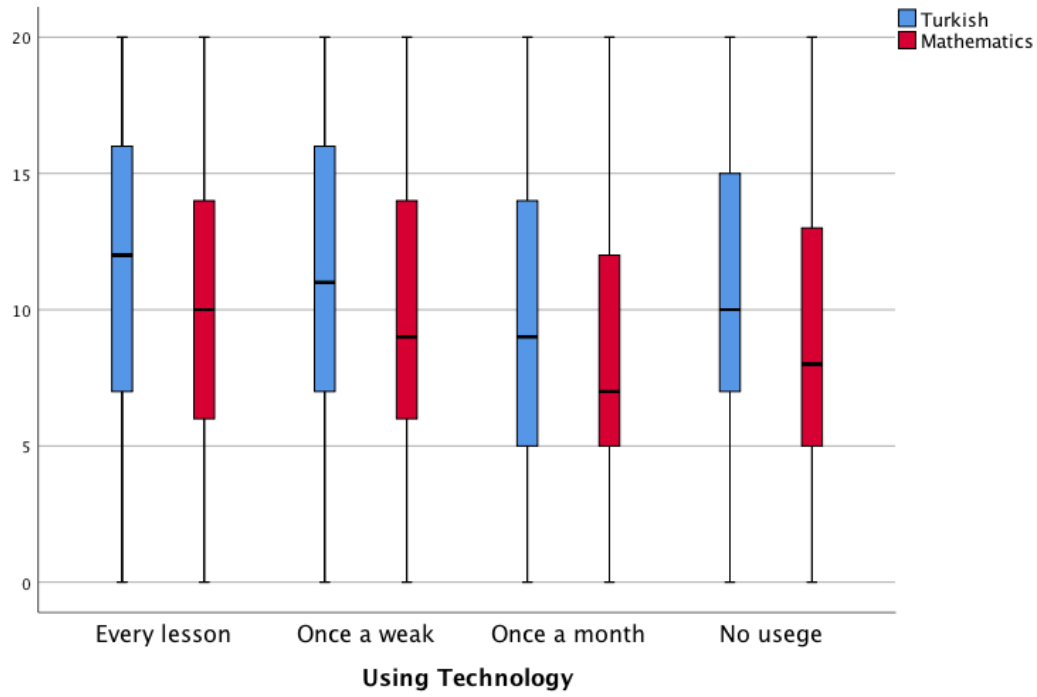

Figure 6. Box Plot of Course Achievement by Participation in Extracurricular Activities at School

When the Turkish and Mathematics achievements are examined according to their participation in extracurricular activities at school (school teams, TUBITAK, chess, etc.), it is seen that learners have higher success in participating in such activities. An independent sample t-test was performed to determine the statistical significance of the differentiation.

Table 11. Comparisons of Course Achievement by Participation in Extracurricular Activities at School

		N	$\bar{x}$	S.d	t	p	Cohen d
Turkish	Yes	5681	12.0625	4.96798	10.750	0.000	0.183
	No	8904	11.1605	4.92404			
Mathematics	Yes	5681	10.8009	5.06614	12.060	0.000	0.205
	No	8904	9.7758	4.90970			

It is seen that the differentiation according to the participation in extracurricular activities at school is statistically significant. When the effect size is examined, it is seen that it is at the medium effect level.

Discussion, Conclusion and Recommendations

When correlation coefficients are evaluated by educational district, a modest and statistically significant connection exists between mathematics and Turkish course success in all locations. This finding is consistent with previous research. For instance, Doğan and Sevindik (2011) found a modest connection between Turkish and Mathematics course results on the SBS test. On the other hand, Güneyli et al. (2010) discovered a strong link between performance in Turkish and mathematics examinations. Similarly, according to the findings of Güleç and Alkış (2003), there is a strong correlation between mathematics and Turkish lessons in elementary school courses, but it varies by grade level. There are several studies (Awofala et al., 2012; Oginni & Owolabi, 2013; Perez & Alieto, 2018) in the international literature that claim there is a correlation between mother tongue achievement and mathematics achievement. Numerous studies demonstrate that this correlation is due to reading comprehension (Jordan & Hanich, 2000; Jordan et al., 2002). Reading comprehension was found to be significantly associated with both mathematics and Turkish course performance in a research done by Yılmaz (2011).

According to the findings, the correlation between mathematics and achievement on Turkish exams varies by education districts. The primary cause for this disparity is believed to be the socioeconomic status in which the pupils live. According to Güvendir (2014), the features of schools have an effect on students' achievement. As seen in Figure 1, the average accomplishment of students in schools in the first district, which is regarded to have a high socioeconomic status, is greater than the average achievement of students in other districts. Due to the tight correlation between mathematics and Turkish performance, the highest correlation value was found in the outcomes of students at these schools.

When the performance of students on exams is compared to the frequency with which technology is used in the classroom, students' achievement is better in classrooms that utilize technology during each lesson and once a week. Additionally, it has been discovered that people who never use it are more successful than those who use it once a month. It has been noticed that students' achievement in classes facilitated by the use of various technological tools has grown at various educational levels (Altunbay & Bıçak, 2018; Çetin & Mirasyedioğlu, 2019; Yıldırım & Demir, 2013; Yorgancı & Terzioğlu, 2013). For the effective use of technological tools, it is a prerequisite for teachers to have technical knowledge (Aslan & Bağçeci, 2021). The results are consistent with the literature in this regard. The study's startling finding is that success rates are reduced when technology is utilized only once a month. It is highlighted the critical nature of combining technology and teacher competency. Rare usage of technology may have diverted the student's focus away from the subject and toward technology.

Another finding from the study is that when students' being on blackboard rose during mathematics classes, their test achievement improved as well. This achievement disparity can be attributed to class engagement. When students like and are inspired by the lecture, they engage more actively and desire to being on the blackboard (Seven & Engin, 2010). In other words, their success will increase when students enroll in additional classes (Çelik et al., 2018). When Figure 3 is analyzed, it is clear that the average number of students who have never been to the blackboard is modest, yet a small proportion of students succeed even if they have never been on the blackboard. However, these students were viewed as outliers examples in the box plots, that is, as aberrant in certain ways. This finding reaffirmed the critical nature of developing course approaches in which all students engage actively.

Additionally, when alternative approaches are not employed in Turkish courses, class achievement is lower than when alternative techniques are used. Alternative teaching approaches are one of the variables that contribute to student achievement (Tertemiz, 2004). The success of students in courses where the alternative teaching technique utilized in Turkish classes is employed has increased (Boz, 2019; Özerbaş & Öztürk, 2017).

Fifthly, students who do not attend support training courses have a reduced chance of success. Repeating subjects and addressing exam questions enhanced students' achievement in these courses (Canpolat & Köçer, 2017; Timur et al., 2020; Ünsal & Korkmaz, 2016). Additionally, studies (Canpolat & Köçer, 2017; Sezgin Nartgün & Dilekçi, 2016; Timur et al., 2020; Ünsal & Korkmaz, 2016) have found an increase in students' academic achievement. In this context, the research findings demonstrate congruence with the literature.

Sixthly, students who participate in extracurricular activities at school have a higher chance of success. Numerous studies have been conducted to determine the impact of extracurricular activities on students' achievement. There is evidence (Melman et al., 2007) that extracurricular activities can have a detrimental effect on academic success. Additionally, there are researches (Görkem, 2012; Sarı, 2012) demonstrating that extracurricular activities have a beneficial effect on students' achievement. Özkan's (2020) study demonstrates a distinction in this regard. When all students are included, students who participate in extracurricular activities have poorer mathematics, reading, and test results than kids who do not participate. While students who achieve a specific level of success (500 on the PISA) are more successful, those who engage in extracurricular activities are more successful, while those who do not engage in activities below this level are more successful. In other words, extracurricular activities assist

successful students while having a negative impact on failing students. Extracurricular activities have different effects depending on the age groups, genders, and families of the children (Balaguer et al., 2020).

The utilization of technology in the classroom, alternate activities, and students' presence on the chalkboard all contribute to success. As a result, instructors are encouraged to incorporate technology into their lectures and use alternative methods to increase student engagement. Students may be encouraged to attend classes if they have an influence on their academic performance. Teachers should also give students with extra opportunities to participate in these classes. In light of the study on extracurricular activities, they should be designed around the interests of the students and in a way that boosts their academic self-confidence. The findings of a common exam given to all students were used to conduct the analysis in this study. The results of teacher-administered achievement assessments and those of common exams can be compared in future studies. Furthermore, analytical studies might be expanded to incorporate additional variables that are thought to be advantageous to students' academic achievement.

References

Altunbay, M., & Bıçak, N. (2018). Türkçe eğitimi derslerinde "z kuşağı" bireylerine uygun teknoloji tabanlı uygulamaların kullanımı. *ZfWT*, *10*(1), 127–142.

Aslan, E., & Bağçeci, B. (2021). Öğretmenlerin Tablet Bilgisayarları Kullanmaya İlişkin Tutumları Ve Yenilikçi Uygulamaları. *Anadolu Türk Eğitim Dergisi*, *3*(1), 6–34.

Awofala, A. A., A Awofala, A. O., Nneji, L. M., & Fatade, A. O. (2012). The Relation between Language and Science, Technology, and Mathematics in Nigerian Schools. *International Journal of Mathematics Trends and Technology*, *3*, 117–124. http://www.internationaljournalssrg.org

Balaguer, Á., Benítez, E., Albertos, A., & Lara, S. (2020). Not everything helps the same for everyone: relevance of extracurricular activities for academic achievement. *Humanities and Social Sciences Communications*, *7*(1), 1–8. https://doi.org/10.1057/s41599-020-00573-0

Boz, İ. (2019). İlkokul 4. Sınıf Türkçe Dersinde Oyunla Öğretim Yönteminin Akademik Başarıya Etkisi. *Sosyal Bilimler ve Eğitim Dergisi*, *1*(1), 61–75.

Brown, R., & Evans, W. P. (2002). Extracurricular Activity and Ethnicity: Creating Greater School Connection among Diverse Student Populations. *Urban Education*, *37*(1), 41–58. https://doi.org/10.1177/0042085902371004

Canpolat, U., & Köçer, M. (2017). Destekleme ve Yetiştirme Kurslarının TEOG Bağlamında Sosyal Bilgiler Öğretmenlerinin Görüşlerine Dayalı Olarak İncelenmesi. *Anadolu Journal of Educational Sciences International*, *7*(1), 123–154.

Çelik, S., Örenoğlu Toraman, S., & Çelik, K. (2018). Öğrenci Başarısının Derse Katılım ve Öğretmen Yakınlığıyla İlişkisi. *Kastamonu Üniversitesi Kastamonu Eğitim Dergisi*, *26*, 209–217. https://doi.org/10.24106/kefdergi.378129

Çetin, Y., & Mirasyedioğlu, Ş. (2019). The Effects of the Technology Supported Problem-Based Learning Activities on Students' Achievement in Mathematics. *Journal of Computer and Education Research*, *7*(13), 13–34. https://doi.org/10.18009/jcer.494907

DeCarlo, L. T. (1997). On the Meaning and Use of Kurtosis. *Psychological Methods*, *2*(3), 292–307. https://doi.org/10.1037/1082-989X.2.3.292

Demir, S. (2011). Two inseparable facets of technology integration programs: Technology and theoretical framework. *Eurasia Journal of Mathematics, Science and Technology Education*, *7*(2), 75–88. https://doi.org/10.12973/ejmste/75182

Doğan, N., & Sevindik, H. (2011). İlköğretim 6 . Sınıflar İçin Uygulanan Seviye Belirleme Sınavı'nın Uygunluk Geçerliği. *Eğitim ve Bilim*, *36*(160), 309–319.

Ede, Ç. (2012). *Zihin haritalama tekniğinin öğrencilerin Türkçe okuma metinlerini anlama, başarı ve öğrenmelerinin kalıcılığına etkisi*. Yayımlanmamış Yüksek Lisans Tezi. Fırat Üniversitesi, Eğitim Bilimleri Enstitüsü.

Görkem, D. (2012). *İlköğretim Öğrencilerinin Sosyal Etkinliklere Katılma Durumlarının Akademik Başarılarına Etkisi*. Yayımlanmamış Yüksek Lisans Tezi. Dokuz Eykül Üniversitesi, Eğitim Bilimleri Enstitüsü.

Güleç, S., & Alkış, S. (2003). İlköğretim Birinci Kademe Öğrencilerinin Derslerdeki Başarı Düzeylerinin Birbiriyle İlişkisi. *Social Sciences*, *2*(2), 19–27.

Gündüz, S., & Çelik, H. Ç. (2015). Öğrencilerin matematik dersinde akıllı tahta kullanımına yönelik tutumlarının çeşitli değişkenler açısından incelenmesi. *Dicle Üniversitesi Ziya Gökalp Eğitim Fakültesi Dergisi*, *25*(25), 157–174. https://doi.org/10.14582/DUZGEF.535

Güneyli, A., Özder, H., Konedralı, G., & Arslan, N. (2010). İlköğretim Öğrencilerinin Türkçe İle Diğer Ders Başarıları Arasındaki İlişki. *Mediterranean Journal of Educational Research*, *7*, 60–72.

Güvendir, M. A. (2014). Öğrenci Başarılarının Belirlenmesi Sınavında Öğrenci ve Okul Özelliklerinin Türkçe Başarısı ile İlişkisi. *Eğitim ve Bilim*, *39*(172), 163–180.

Hopkins, K. D., & Weeks, D. L. (1990). Tests for Normality and Measures of Skewness and Kurtosis: Their Place in Research Reporting. *Educational and Psychological Measurement*, *50*(4), 717–729. https://doi.org/10.1177/0013164490504001

Jordan, N. C., & Hanich, L. B. (2000). Mathematical thinking in second-grade children with different forms of LD. *Journal of Learning Disabilities*, *33*(6), 567–578. https://doi.org/10.1177/002221940003300605

Jordan, N. C., Kaplan, D., & Hanich, L. B. (2002). Achievement growth in children with learning difficulties in mathematics: Findings of a two-year longitudinal study. *Journal of Educational Psychology*, *94*(3), 586–597. https://doi.org/10.1037/0022-0663.94.3.586

Medyasari, L. T., Zaenuri, & Dewi, N. R. (2021). The measurement of self-efficacy students in mathematics lesson tenth students of senior high school. *Journal of Physics: Conference Series*, *1918*(4). https://doi.org/10.1088/1742-6596/1918/4/042128

Melman, S., Little, S. G., & Akin-Little, K. A. (2007). Adolescent overscheduling: The relationship between levels of participation in scheduled activities and self-reported clinical symptomology. *The High School Journal*, *90*(3), 18–30.

Oginni, I. O., & Owolabi, T. O. (2013). Effect of Mother Tongue and Mathematical Language on Primary School Pupils Performance in Mathematics. *Journal of Emerging Trends in Educational Research and Policy Studies*, *4*(3), 542–546.

Özerbaş, M. A., & Öztürk, Y. (2017). Türkçe dersinde dijital hikâye kullanımının akademik başarı, motivasyon ve kalıcılık üzerinde etkisi. *TÜBAV Bilim*, *10*(2), 102–110.

Özkan, U. B. (2020). PISA-2015 Verilerine Göre Öğrencilerin Ders Dışı Etkinliklere Katılımlarının Akademik Başarılarına Etkisi. *İnönü Üniversitesi Eğitim Fakültesi Dergisi*, *21*, 254–269. https://doi.org/10.17679/inuefd.504780

Perez, A. L., & Alieto, E. (2018). Change of "tongue" from English to a local language: A correlation of Mother Tongue Proficiency and Mathematics Achievement. *Asian ESP Journal*, *14*(7), 132–150.

Sarı, M. (2012). Ortaöğretim Öğrencilerinin Ders Dışı Etkinliklere Katılımının İncelenmesi. *Kuramsal Eğitimbilim Dergisi*, *5*(1), 72–89.

Seven, M. A., & Engin, A. O. (2010). Öğrenmeyi Etkileyen Faktörler. *Atatürk Üniversitesi Sosyal Bilimler Enstitüsü Dergisi*, *12*(2), 189–212. https://doi.org/10.14527/9786053187547.02

Sezgin Nartgün, Ş., & Dilekçi, Ü. (2016). Eğitimi Destekleme ve Yetiştirme Kurslarına İlişkin Öğrenci ve Öğretmen Görüşleri. *Kuram ve Uygulamada Eğitim Yönetimi*, *22*(4), 537–564. https://doi.org/10.14527/kuey.2016.021

Stearns, E., & Glennie, E. J. (2010). Opportunities to participate: Extracurricular activities' distribution across and academic correlates in high schools. *Social Science Research*, *39*(2), 296–309. https://doi.org/10.1016/j.ssresearch.2009.08.001

Şahan, H. H. (2008). Zenginleştirilmiş Öğretim Etkinliklerinin İlköğretim 3. Sınıf Matematik Dersi Öğretim Programındaki Kazanımların Gerçekleşme Düzeyine ve Öğrencilerin Akademik Özgüven Özelliklerine Etkisi. *Kuram ve Uygulamada Eğitim Yönetimi*, *56*, 607–632.

Tatar, E., & Soylu, Y. (2006). Okuma-anlamadaki başarının matematik başarısına etkisinin belirlenmesi üzerine bir çalışma. *Kastamonu Eğitim Dergisi*, *14*(2), 503-508 OKUMA-ANLAMADAKİ.

Tertemiz, N. I. (2004). Çok Zekâ Kuramı'na Göre Bütünleştirilmiş Etkinliklerin Öğrenci Başarısı Üzerindeki Etkisi. *Eğitim ve Bilim*, *29*(134), 1–10.

Timur, S., Kahraman, S., Timur, B., & İşseven, A. (2020). Destekleme ve Yetiştirme Kurslarına (DYK) İlişkin Ortaokul Öğrencilerinin Görüşleri. *Trakya Eğitim Dergisi*, 216–228. https://doi.org/10.24315/tred.566362

Türküresin, H. E. (2018). Destekleme ve Yetiştirme Kurslarının Öğretmen ve Öğrenci Görüşlerine Göre İncelenmesi ; Kütahya İli Örneği. *Adnan Menderes Üniversitesi Eğitim Fakültesi Eğitim Bilimleri Dergisi*, *9*(2), 73–85.

Ünsal, S., & Korkmaz, F. (2016). Destekleme ve Yetiştirme Kurslarının İşlevlerine İlişkin Öğretmen Görüşlerinin İncelenmesi. *KSÜ Sosyal Bilimler Dergisi*, *13*(2), 87–118.

Verschaffel, L., Rathé, S., Wijns, N., Degrande, T., van Dooren, W., De Smedt, B., & Torbeyns, J. (2020). Young Children's Early Mathematical Competencies: The Role of Mathematical Focusing Tendencies. *Mathematics Education in the Early Years*, 23–42. https://doi.org/10.1007/978-3-030-34776-5_2

Yıldırım, İ., & Demir, S. (2013). Use of Technology Assisted Mathematics. *Çukurova University Faculty of Education Journal*, *42*(1), 65–73.

Yılmaz, M. (2011). İlköğretim 4. Sınıf öğrencilerinin okuduğunu anlama seviyeleri ile Türkçe, matematik, sosyal bilgiler ve fen ve teknoloji derslerindeki başarıları arasındaki ilişkinin belirlenmesi. *Dumlupınar Üniversitesi Sosyal Bilimler Dergisi*, *29*.

Yorgancı, S., & Terzioğlu, Ö. (2013). Matematik öğretiminde akıllı tahta kullanımının başarıya ve matematiğe karşı tutuma etkisi. *Kastamonu Eğitim Dergisi*, *21*(3), 919–930.