

**NEW FRONTIERS IN
EDUCATIONAL SCIENCES**

EDITOR

Prof. Rasim Erol DEMİRBATIR



New Frontiers in Educational Sciences
Editör: Prof. Rasim Erol DEMİRBATIR

Genel Yayın Yönetmeni: Berkan Balpetek
Kapak ve Sayfa Tasarımı: Duvar Design
Yayın Tarihi: OCTOBER 2023
Yayıncı Sertifika No: 49837
ISBN: 978-625-6585-07-2

© Duvar Yayınları
853 Sokak No:13 P.10 Kemeraltı-Konak/İzmir
Tel: 0 232 484 88 68

www.duvar yayinlari.com
duvarkitabevi@gmail.com

TABLE OF CONTENTS

Chapter 1.....5
The Effect of Home Experiments with Simple Tools on Types of Scientific
Process Skills: The Case of Light Unit
Arzu ASA, Sevgül ÇALIŞ

Chapter 2.....25
Examining The Experiences of
Faculty Members' Towards Distance Education
Zeynep Şule TEKCAN, Aynur GEÇER, Arzu Deveci TOPAL

Chapter 3.....63
Creativity in Gifted People
İsmail KILIÇ, Kemal Caner ÖNCÜL

Chapter 4.....75
"Practical Implications of Mnemonic Keyword Method in
L2 Vocabulary Learning and Teaching: A Comprehensive Meta-Analysis"
Sümeyye Eyşan Gizem AYDOĞDU, Buğra ZENGİN

Chapter 5.....97
Opinions of Administrators, Classroom and Guidance Teachers
Regarding Training Programs in Primary Schools (İYEP)
Gamze ETEM, Seda KERİMGİL ÇELİK

Chapter 1

The Effect of Home Experiments with Simple Tools on Types of Scientific Process Skills: The Case of Light Unit

Arzu ASA¹, Sevgül ÇALIŞ²

¹*Bursa Uludağ Üniversitesi Eğitim Bilimleri Enstitüsü*

812251002@ogr.uludag.edu.tr. ORCID: 0000-0002-8608-2179

²*Doç. Dr. , Bursa Uludağ Üniversitesi, Eğitim Fakültesi, Matematik ve Fen Fen Bilimleri Eğitimi Bölümü,*

scalis@uludag.edu.tr. ORCID: 0000-0002-5195-3210

Abstract

At the point where science has reached today, it is known that the scientific knowledge obtained has increased rapidly with the developing technology. The use of this information as well as its production requires a number of skills and is important in many aspects from understanding the universe we are in to solving daily life problems. Providing students with scientific process skills has a critical role at this point. In this study, it was investigated how seventh grade students' home experiments using simple materials affect the development of which kind of scientific process skills. In this mixed method study, the Scientific Process Skills Test (SPST) and unstructured student diaries were used as data collection tools. All data were collected online. Quantitative data were analysed with SPSS and qualitative data were used to support the quantitative findings. The findings are presented in tables and graphs.

Key words: *Scientific process skills, experiment with simple tools, home experiments, light unit*

INTRODUCTION

Today, as technology advances rapidly, the scientific knowledge produced is also increasing. This information makes it easier for us to know the universe, our world and our environment better. However, in order to do this, it is necessary to transfer and use the existing knowledge to our daily lives; to go from the known to the unknown and to be able to make inferences by predicting knowledge in order to solve some problems.

Almost everything we encounter in our daily lives is closely related to science. At the point where science has reached today, it is possible to define science as the process of thinking about the nature of knowledge, perceiving the current accumulation of knowledge and producing knowledge. In this context, science contains two elements: scientific attitudes and ways of acquiring knowledge (Tan & Temiz, 2003). Scientific attitudes are the characteristics of scientists such as curiosity, humility, not being intimidated by failure, open-mindedness, and accuracy (Oğuzkan, 1984). Scientific process skills, on the other hand, include observation, classification, measurement, establishing number and space relationships, prediction, recording data, using data and creating models, interpreting data, drawing conclusions, determining variables, changing and controlling variables, hypothesizing and testing, and experimenting (Tan & Temiz, 2003).

Scientific process skills have been defined in different ways by different researchers. For example, Osborne and Fryberg (1985) and Ostlund (1992) define them as the skills needed to acquire knowledge about the world and to organize the acquired knowledge, while Çepni, Ayas, Johnson, and Turgut (1997) define them as the basic skills that make learning in science easier, provide research methods, enable active learning in students, encourage the development of a sense of responsibility in their learning, and increase retention in learning. These skills are used not only in the learning-teaching process at school but also in daily life (Rillero, 1998).

Since science has such an all-encompassing nature, it is expected that education and training activities in this field can provide individuals with certain skills. Teachers interpret the methods used by scientists in order to help children acquire certain knowledge, skills and attitudes. In this context, everything in the learning-teaching process should include the methods used by scientists. Teaching in schools aims to help children understand how scientists investigate the knowledge they produce. Children need to understand how scientific cross-sections occur (Arslan & Tertemiz, 2004). In addition, when we look at the point reached by humanity, it is clearly seen that societies that have chosen the scientific path have made a difference in many fields (Yıldırım, 2020). For this

reason, curricula should include objectives for students to gain scientific process skills. When the curricula from the Republic to the present day are examined, it is seen that scientific process skills are included in all curricula, albeit at different rates, scientific process skills started to be included as a separate title in the 2005 science and technology curriculum, and in the 2013 and 2018 curricula, scientific process skills are included under a title together with other skills, but still maintain their importance in science programs (Kul, Kızılay, & Öner, 2021).

Just as it is not possible to teach painting without paint and canvas, it is not possible to talk about a qualified science education without laboratories and experiments (Seven & Engin, 2018). The role of experiments in the acquisition and development of scientific process skills in science courses is of course undeniable. Aydoğdu (2006) emphasized that laboratory studies should definitely be emphasized for the development of scientific process skills. The main point to be emphasized here is experimental activities, but although it is obvious that the concepts of 'experiment' and 'laboratory' are evocative of each other, the presence of materials in the laboratory is not a prerequisite for conducting effective experiments. Ergin et al. (2005) pointed out that experiments conducted with cheap tools and materials can be of the same quality as experiments conducted with expensive tools and materials.

Some of the benefits of conducting experimental activities with simple and cheap materials (Başdaş, Kirişcioğlu, & Oluk, 2006; cited in Başdaş, 2007) can be listed as follows:

1. "If I hear, I forget; if I see, I remember; if I do, I understand" (Chinese proverb). Learning science by doing is helpful in learning scientific concepts and developing critical thinking skills.
2. Believing that one can solve problems encountered in daily life by oneself, using simple ways and tools develops self-confidence.
3. Since simple and inexpensive materials come from daily life, students can easily establish the relationship between science subjects and daily life, and their interest in learning science increases.
4. The knowledge gained through the student's own experiences is more permanent; in addition, seeing where the theoretically learned information is used and applying the knowledge accelerates the learning process, as well as allowing the information to be reshaped in the student's memory, organized and transferred to other situations (new subjects to be learned) and used.
5. When students create the required material or successfully complete an activity, they feel the motivation and satisfaction of success and their attitude towards the lesson increases positively.

6. Students with learning difficulties can somehow be involved in the learning process, as the activity is at the forefront.
7. The development level of students' hand and mind skills increases more compared to experiments conducted with ready-made laboratory materials. Since the method is aimed at all cognitive, affective and psychomotor development dimensions of the student and provides student development in these three dimensions, it is more prominent in terms of application and education than other methods.
8. In terms of cognitive dimension, it provides the development of not only basic steps such as knowledge and comprehension but also high-level thinking skills such as analysis, synthesis and application.

Ergin et al. (2012) stated that it is important for students to conduct the experiments themselves when the skills to be gained are taken into consideration. According to Al-Shamali and Connors (2010), the fact that students work on their own will enable them to make more effort to perform experiments and this is important in active learning.

The aim of this study is to determine the effect of conducting experiments with simple tools and materials at home on the development of students' science process skills and to reveal the effects of this process on the types of science process skills. In the literature, it is possible to find studies examining the effects of experiments, activities and guidance materials made with simple tools on many different variables including science process skills. Among the studies involving the process of experimenting with simple materials, there are those conducted by students under the guidance of a teacher at school, as well as those in which only the teacher conducts the experiment and the students are the audience. It has been observed that there are quite a few studies on experiments conducted by students at home without any face-to-face teacher-student interaction and all of them are conducted by students themselves in line with the instructions. In addition, unlike most other studies, the development of sub-skill types was also compared in this study. It is thought that the study will contribute to the literature in this context.

METHOD

In this study, a mixed method was adopted. The basic assumption of the mixed approach is that using quantitative and qualitative data together will be more advantageous than using either of these methods alone to better understand the research problem (Creswell, 2021). In this study, quantitative and qualitative data sets were collected simultaneously and qualitative findings were used to support quantitative findings. In this context, it can be said that the research design is a convergent parallel design. In this design, quantitative and qualitative data sets

are collected simultaneously but independently, the collected data are analyzed independently, the findings obtained from the analyses are combined in reaching and interpreting the results; the aim is to combine and/or compare the findings obtained by looking at a situation / phenomenon / event with two different research approaches (Çepni, 2021). The quantitative data of the study were obtained by applying the test used in the research to a single group without a control group as pre-test and post-test (simple experimental design), and the qualitative findings obtained from the diaries were used to support the quantitative findings.

Population and Sample

The sample of the study consisted of a total of 30 seventh grade students, 17 female and 13 male, studying in the same grade in a public school in Bursa province. Sample selection was made through convenience sampling. Kılıç (2013) stated that the convenience sampling method accelerates the research as a result of the researcher's selection of a situation that is close and easy to access, and although it has been criticized as having a high bias, this sampling method is used in cases where it is not possible to use other methods. In order to prevent data loss by increasing communication throughout the research, the sample of the study was selected as the class in which the researcher was the branch guidance teacher.

Unit Selection and Implementation Process

In the study, the 'Interaction of Light with Matter' unit, which is approximately seven weeks in the seventh grade Science Curriculum, was selected. The reason for choosing this unit is that among the seventh grade units, the units that contain a large number of experiments that can be designed with simple materials are the units where physics subjects are generally concentrated. This refers to the fifth and seventh units since the research was conducted in the second semester of the academic year. However, since the seventh unit is the last unit, it was decided to conduct the research within the scope of the specified unit in order to minimize the risk of the data collection process being affected by some disruptions that may occur at the end of the year or some negative attitudes that may be caused by the fatigue of the season and the year.

The study consisted of eight experiments in total, with at least one experiment planned to be conducted each week for seven weeks; however, two experiments were designed as back-ups as a precaution against various unforeseen negativities, so that the sampled students were expected to complete at least eight experiments. Instructions for the experiments, all of which were designed using simple tools that

could be easily found at home or easily available, were prepared and shared with the students online in the form of a weekly experiment sheet and they were asked to complete the experiments in accordance with the instructions within the given time. The equipment used in the experiments is shown in Figure 1.

Figure 1

List of materials used in experiments

Experiment number	Tools and equipment used in the experiment
1	Transparent plastic or glass bottles, balloons, white and black papers (or acrylic paint), scissors, tape, water, appropriate size brush if paint is to be used
2	Glass container (tray, bowl, etc.), mirror (large enough to fit inside the container), light source (flashlight, phone camera, etc.), water
3	Bowl, egg, mirror, aluminum foil
4	Metal spoon, white paper, crayons, scissors
5	Freezer bag, A4 paper, pen, several colors paint, bowl, water
6	Ballpoint pen, A4 paper, transparent jar, water
7	Large transparent glass cup, small transparent glass cup, oil
8	Forks, transparent glasses, water, oil, cologne
9	Plastic transparent pet bottle with a cap, paper, water
10	Transparent jar, book or newspaper, water

Expert opinion was taken during both the design of the experiments and the creation of the data sheets. Care was taken to ensure that the experiments to be

used in the research were aimed at the same outcomes as the experiments in the textbook, but were as different as possible from the experiments in the book in terms of the materials used, method, application steps, etc. and to include scientific process skill steps as much as possible. Students were asked to take photographs while performing the experiments and the photographs were collected and stored in digital media. Examples of the photographs shared by the students throughout the research are presented in Figure 2.

Figure 2
Some examples of student experiments

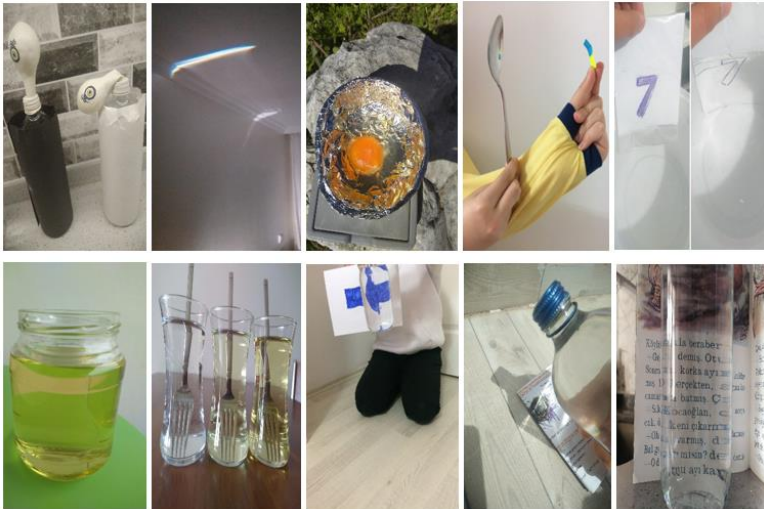
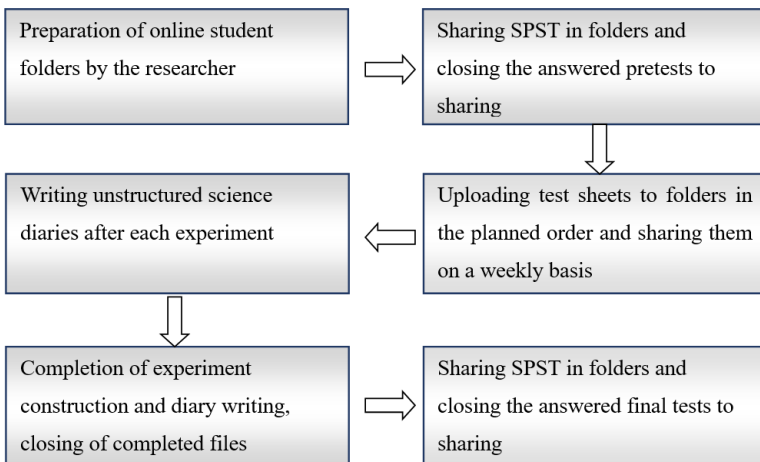


Figure 3
Application process flow diagram



Data Collection Tools

In the study, the Scientific Process Skills Test (SPST) was used to collect quantitative data and unstructured student diaries were used to collect qualitative data.

Scientific Process Skills Test (SPST): The test used in the study consists of 25 items with four options. Since each correct answer given by the students will be scored as one point, the highest score that can be obtained from this test is 25 and the lowest score is zero. The reliability coefficient of the test, the first version of which was suitable for the eighth grade level and therefore adapted to the seventh grade level by Aydođdu (2006), was calculated as 0.81 by the researcher who finalized the test.

Unstructured science diary: Unstructured science journals were used to support the statistical data obtained in the study. Science journals are records in which students write what they do in science lessons. In order to increase our knowledge about students' science learning, it is necessary to examine their interactions with peers, science experiences, drawings, writings and interpretations from different perspectives (Erduran-Avcı, 2008).

Data Collection and Analysis

All data of the study were collected online. In order for the process to proceed in a healthy manner, necessary information was provided to the students and their parents in addition to their consent. Within the scope of the information, students were asked to create an e-mail account with the help of their parents, and the preparation process was completed by informing them that written data should be collected in this way as much as possible, and if it could not be collected in this way for various reasons, it should be collected through alternative online communication channels. In the online storage environment connected to the researcher's own account, a folder named with the student's name and surname was prepared for each student. Then, one copy of the experiment sheets designed before the research was uploaded to the students' folders on the dates planned by the researcher and the process was carried out by sharing these sheets with them in a way that they could directly edit them.

The data collection process was planned for approximately nine weeks including the pre-test and post-test. For the qualitative dimension of the study, the sampled students were encouraged to write unstructured science journals after their experiments to cover the situations, feelings, expectations, etc. they encountered before, during and after the experiment.

Quantitative data were analyzed with the help of SPSS and Microsoft Excel programs. The data obtained from the SPS pre-test and post-test were compared in various aspects and presented as graphs or tables in the findings section. Qualitative data were subjected to content analysis, categories and codes were determined, and the findings were tabulated and presented. The students were numbered from one to thirty (S1, S2, ...) in the order of the class list.

FINDINGS

In this section, the quantitative findings obtained from the SPST and the qualitative findings obtained from the unstructured science journals are presented respectively.

Quantitative findings

First, the normality distribution was examined according to the kurtosis-skewness values. The values obtained are given in Figure 4.

Figure 4

SPS Pre-Test and Post-Test Analysis Results According to Kurtosis-Skewness

SPST normality distribution table		
Test type	Kurtosis	Skewness
Pre-test	0,266	0,465
Post-test	-0,286	-0,541

According to the analysis, both the pre-test and post-test kurtosis and skewness values were found to be approximately between -2 and + 2. George and Mallery (2016) stated that finding these values between -2 and +2 means that the variables are normally distributed. From the values obtained, it can be said that the sample has a normal distribution. These results indicate that the distribution is normal and it is appropriate to conduct a t-test.

Since the sample had a normal distribution, the analysis of the SPS pre-test and post-test results was conducted with the paired samples t-test. The results obtained from the paired samples t-test are given in Figure 5.

Figure 5

SPST Paired Samples t-test Results

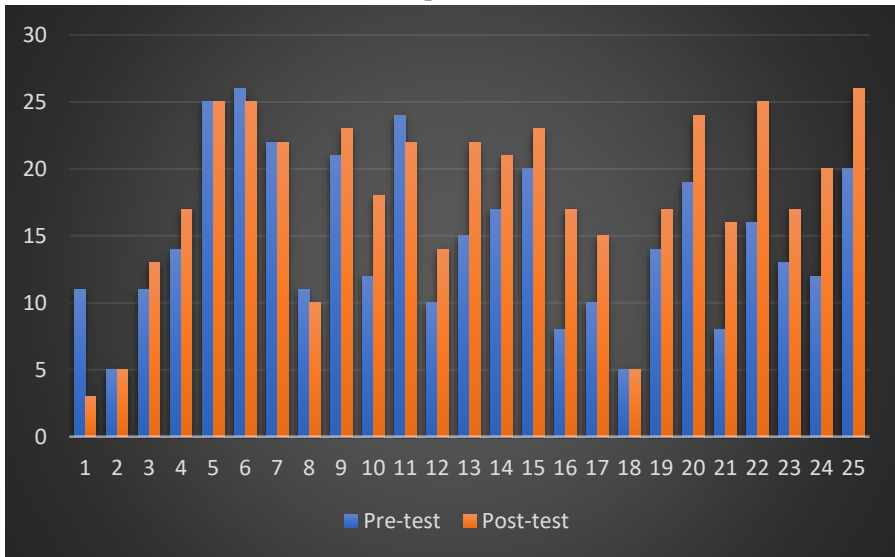
Measurement	N	\bar{X}	S	sd	t	p
Pre-test	30	12,30	4,4268	29	-3,78	,001
Post-test	30	14,87	4,0999			

According to the findings of the paired samples t-test, there was a significant difference between the mean of the pre-procedure mean of the pre-procedure mean of the SPST ($\bar{X} = 12.30$) and the mean of the post-procedure mean of the post-procedure mean of the SPST ($\bar{X} = 14.87$) with 95% reliability [$t(29) = -3.78, p < 0.05$]. Thus, it was determined that the intervention had a statistically significant effect on students' science process skills.

When the results of the SPS pre-test and the SPS post-test were examined, it was seen that there was an increase in the number of students who answered most of the test items correctly in favor of the post-test. In addition to all these, the other and main purpose of this research is to find out which science process skills were developed more by students conducting experiments with simple materials at home during the unit. For this reason, first of all, the change in the number of students answering the items in the SPST was examined, and the comparative graph of the number of students answering correctly for each item in the SPST pre-test and SPST post-test is shown in Figure 6.

Figure 6

Number of students who answered the SPS test items correctly in the pre-test and post-test



When Figure 6 is analyzed, it is seen that there is a decrease in the number of students who answered items 1, 6, 8 and 11 correctly in the post-test compared to the pre-test. However, the number of students who answered items 2, 5, 7 and 18 correctly in the pretest and posttest did not change. It is seen that there is an

increase in favor of the post-test in the number of students who answered 17 items correctly, except for the aforementioned eight items.

Based on the data in Figure 6 and the fact that the correct answer of each test item is one point, the average scores obtained by the entire sample from each of the test items were calculated. The findings obtained are presented in Figure 7 as a comparative graph for the pre-test and post-test.

Figure 7
The mean scores obtained in the pretest and posttest for the items of the SPST

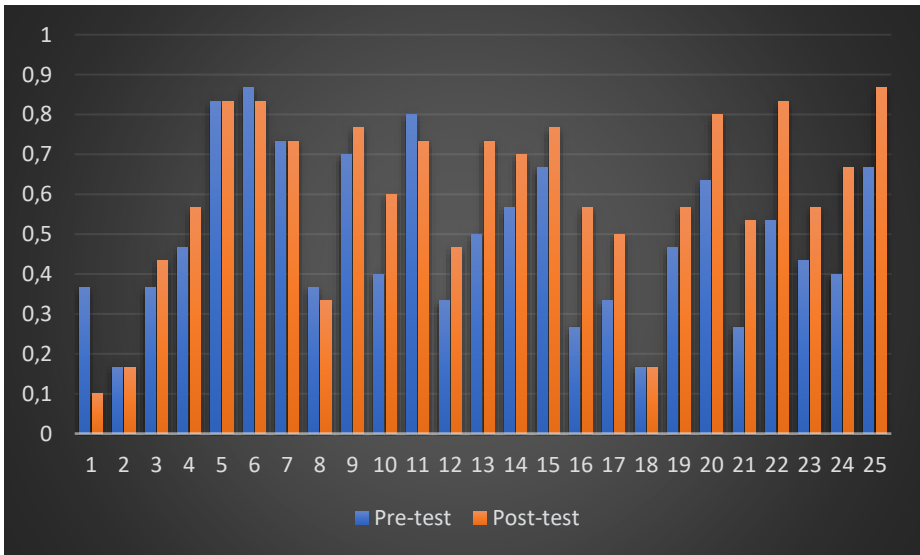
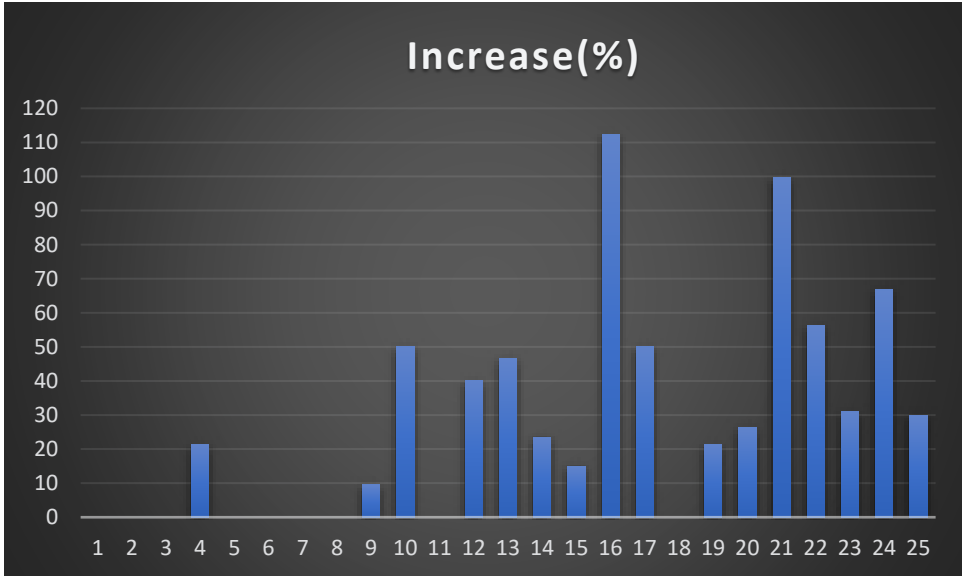


Figure 7 shows the pre-test and post-test averages of the items in the SPST. In parallel with Figure 1, it is seen that there is an increase in the mean correct answers of the items numbered 3, 4, 9, 10, 12, 13, 14, 15, 16, 17, 19, 20, 21, 22, 23, 24, and 25. It is noteworthy that the rate of correct answers of some items in the post-test is considerably higher than the rate in the pre-test.

From this point of view, the differences of each test item between the pre-test and post-test were calculated and the percentage of increase in each item was determined. Figure 8 shows the rate of increase in the scores for each of the items whose average correct answer scores showed a difference in favor of the post-test.

Figure 8

Ratios of the difference in the SPST items with an increase in post-test scores



When Figure 8 is analyzed, it is seen that the rate of correct answers for items numbered 10, 16, 17, 21, 22 and 24 increased by 50% or more in the post-test compared to the pre-test.

The distribution of the items in the SPST used in the study according to the types of skills they measure in terms of number and ratio is tabulated in Figure 9.

Figure 9

Distribution of SPST items according to the types of skills they measure

Scientific Process Skills	Item numbers in the test	Number of items	Frequency (%)
Hypothesis Formulation and Definition	3, 7, 11, 18, 20, 24	6	24
Identifying Variables	2, 4, 8, 9, 10, 12, 13, 14, 21, 22, 23, 25	12	48
Operational Explanation	1, 17	2	8
Designing Investigations Required for Problem Solving	5, 15, 16	3	12
Drawing and Interpreting Graphics	6, 19	2	8
Total		25	100

When Figure 9 is analyzed, it can be said that almost half (48%) of the 25 items in the test are related to the ability to identify variables. It is seen that the skills with the lowest measurement rate of the test items (8%) are the ability to provide operational explanations and the ability to draw and interpret graphs.

Qualitative Findings

When the unstructured science journals written by the students were analyzed, it was found that some of the students' journals contained expressions referring to certain skills. The codes obtained from these statements in the skill development category and examples of student statements in the diaries are tabulated and presented in Figure 10.

Figure 10

Findings from the Analysis of Unstructured Science Diaries

Category	Code	Examples of student expressions
Skill development	Making inferences	S4: ...The temperature was also good, but I think I chose the wrong day, sometimes the clouds blocked the sun and sometimes the wind was blowing and it moved the paper and the place where it focused on the paper changed, so it might not burn.
	Prediction	S22: The two most important factors in this experiment are sunlight and the colors of the papers. If I had done this experiment at a time when there was no sunlight, the experiment would have failed. S3: ...the experiment we did now took a lot of work because it was spring because the sun is not that effective, but if it was summer, we could finish it in a shorter time because the sun emits more heat in summer, so this experiment can be done in a short time...
	Using knowledge	S10: My mother liked this experiment very much, she sometimes has difficulty reading small print and by doing this she can read it easily. S22: People learn better by trying things, so doing these experiments helps us to understand the subject better.

	S13: I liked that the jar was used instead of a magnifying glass in this experiment. It is also an ideal example that we can use if we don't have a magnifying glass at home.
Developing alternatives	S1: I did this experiment with a glass bottle because there were no plastic bottles at home...
Problem solving	S19: While doing the experiment, the colors did not come out at first, but I corrected this problem by changing the angle of the mirror.

When Figure 10 is examined, it is seen that the students used some science process skills along with different types of skills or included these skills in their statements while conducting experiments with simple materials at home.

CONCLUSION AND DISCUSSION

In this study, in which the contribution of experiments conducted at home using simple materials to the development of science process skills was investigated, it was determined that conducting experiments at home with the tools designed by the researcher and all of which could be found at home in accordance with a certain instruction contributed to the students' science process skills. These results coincide with the results obtained from similar studies in the literature.

In the process of the students conducting experiments at home with simple tools, the mean scores of the items in the SPST changed against the posttest in four of the 25 items and in favor of the posttest in seventeen items. The number of correct answers of four items in the pre-test and post-test, hence the mean scores, remained the same.

When the findings were analyzed according to the sub-dimensions of the SPST used in the study, it was found that the highest rate of increase between the pre-test and post-test scores (112.356%) was in the 16th item in the 'designing investigations necessary for problem solving' sub-dimension of the test. According to the findings obtained from the SPST, the second highest rate of increase (99.625%) between the post-test and pre-test scores belongs to the 21st item in the 'determining variables' sub-dimension.

The other items where the increase in mean scores was 50% or more in favor of the post-test were items 10, 17, 22 and 24 (50%, 50.15%, 56.285%, 66.75%, respectively). Among these, item 17 is in the 'providing procedural explanations' sub-dimension, while items 10 and 22 are in the 'determining variables' sub-dimension.

Another remarkable result of the study is that four of the eight items that did not show a difference in favor of the post-test were gathered in the 'hypothesizing and defining' sub-dimension. It is thought that the reason for this situation is that the students performed the experiments in accordance with a directive, in other words, they were prescription type experiments.

As can be seen from here, the experiments that the students conducted by themselves at home using simple materials improved the ability to identify and change variables the most. Çak (2022) reached a similar conclusion in his study with a total of 30 fifth grade students, 15 in the experimental group and 15 in the control group. The reason for this situation may be that even though it contains instructions, students try different ways to develop solutions to the problems and difficulties they encounter for various reasons while performing experiments. Some of the statements in the student diaries also support this idea.

References

- Al-Shamali, F., & Connors, M. (2010). Low-cost physics home laboratory. In D. Kennepohl, & L. Shaw, (Eds.), *Accessible Elements: Teaching Science Online and at a Distance* (pp.131–145). Canada: AU Press.
- Arslan, A. G., & Tertemiz, N. (2004). İlköğretimde bilimsel süreç becerilerinin geliştirilmesi. *Türk Eğitim Bilimleri Dergisi*, 2(4), 479-492.
- Aydoğdu, B. (2006). *İlköğretim fen ve teknoloji dersinde bilimsel süreç becerilerini etkileyen değişkenlerin belirlenmesi* (Doctoral dissertation, DEÜ Eğitim Bilimleri Enstitüsü).
- Aydoğdu, B., Tatar, N., Yıldız, E., & Buldur, S. (2012). İlköğretim öğrencilerine yönelik bilimsel süreç becerileri ölçeğinin geliştirilmesi. *Journal of Theoretical Educational Science*, 5(3), 292-311.
- Basdas, E. (2007). İlköğretim Fen Eğitiminde Basit Malzemelerle Yapılan Fen Aktivitelerinin Bilimsel Sürec Becerilerine, Akademik Başarıya ve Motivasyona Etkisi. Yüksek Lisans Tezi. Celal Bayar Üniversitesi. *Fen Bilimleri Enstitüsü. Manisa*.
- Creswell, J. W., & Sözbilir, M. (2017). *Karma yöntem araştırmalarına giriş*. Pegem Akademi.
- Çak, E. (2022). *5. sınıf kuvvetin ölçülmesi ve sürtünme ünitesinin çevrim içi ortamda basit araç gereçlerle öğretimi üzerine bir çalışma* (Master's thesis, Bursa Uludağ Üniversitesi).
- Çepni, S. (2021). *Araştırma ve Proje Çalışmalarına Giriş (Gözden geçirilmiş dokuzuncu baskı)*. Celepler yayın ve dağıtım.
- Çepni, S., Ayas, A., Johnson, D., & Turgut, M. F. (1996). Fizik öğretimi. Ankara: Milli Eğitim Geliştirme Projesi Hizmet Öncesi Öğretmen Eğitimi Deneme Basımı, 31–44.
- Erduran Avcı, D. (2008). Fen ve teknoloji eğitiminde öğrenci günlüklerinin kullanılması. *Eurasian Journal of Educational Research*, 30, 17-32.
- Ergin, Ö., Şahin-Pekmez, E., ve Öngel-Erdal, S. (2012). *Kuramdan uygulamaya deney yoluyla fen öğretimi (Gözden geçirilmiş ikinci baskı)*. Dinazor.
- George, D., & Mallery, P. (2016). *IBM spss statistics 23 step by step: A simple guide and reference*. Routledge.
- Kul, H., Kızılay, E. ve Öner, F. (2021). Türkiye'deki fen öğretim programlarında bilimsel süreç becerilerinin yeri. *Uluslararası Sosyal Bilimler Eğitimi Dergisi*, 7(2), 327-347.
- Tan, M. Ve Temiz, B. K. (2003). Fen öğretiminde bilimsel süreç becerilerinin yeri ve önemi. *Pamukkale Üniversitesi Eğitim Fakültesi Dergisi*, 13(13), 89-101.

- Oğuzkan, F. (1984). Orta öğretim kurumlarında fen öğretimi ve sorunları. in. *Fen Öğretimi (77-82) Ankara: Şafak Matbaası.*
- Osborne, R., & Freyberg, P. (1985). *Learning in Science. The Implications of Children's Science.* Heinemann Educational Books, Inc., 70 Court Street, Portsmouth, NH 03801..
- Ostlund, K. L. (1992). Science process skills: assessing hands-on student performance. New York: Addison-Wesley.
- Rillero, P. (1998). Process skills and content knowledge: Science activities.
- Yıldırım, M. (2020). Fen öğrenme ve öğretim yaklaşımları. H. Ş. Ayvacı (Editör). *Fen öğrenme ve öğretim yaklaşımları içinde (ss.1-14).* Pegem yayıncılık.

Chapter 2

Examining The Experiences of Faculty Members' Towards Distance Education¹

Zeynep Şule TEKCAN², Aynur GEÇER³,

Arzu Deveci TOPAL⁴

¹*This study is the production of 1st author's master's thesis*

²*Teaching Assistant, Turkish Naval Forces, zsulesulun@gmail.com, Orcid No: 0000-0003-4154-7208*

³*Prof. Dr., Kocaeli University, Department of Computer and Instructional Technologies, aynurgecer@gmail.com, Orcid No: 0000-0002-6121-0664*

⁴*Associate Professor Dr., Kocaeli University, Department of Computer and Instructional Technologies, arzudevecit@gmail.com, Orcid No: 0000-0001-5090-8592*

INTRODUCTION

The coronavirus pandemic, declared as a "Pandemic" by the World Health Organization, has shown its effect in our country as well as all over the world. Social distancing has been stated as one of the important stages in the drug-free fight against the pandemic (Feng, Xu, & Zhao, 2007 p.1511). The virus, which affects many areas of life such as social, political, economic, etc., has led to major changes and measures such as the closure of academic institutions all over the world, postponement of education and urgent transition to distance education (Arora et al. 2021 p. 2). In order to reduce the intensity in the health system due to the rapid spread of the virus, education was compulsorily suspended in schools (Giannini & Lewis, 2020).

This process, which is a temporary and alternative method in education due to crisis conditions, is referred to as "Emergency Remote Teaching" in the literature. The main purpose here is to provide access to education and training during an emergency or crisis with a reliable system to be established quickly (Hodges et al., 2020 p.6). The rapid spread of the virus in South Korea, followed by Iran and Italy, prompted higher education institutions to change the way they operate (UNESCO, 2020). The pandemic period has led educators around the world to provide emergency distance education (Marshall et al., 2020 p.47). In many countries (United States, Argentina, United Arab Emirates, China, France, Croatia, Cyprus, Egypt, Greece, Greece, Italy, Japan, Mexico, Portugal, Portugal, Saudi Arabia), online platforms requiring internet connection have been used for continuous learning (Chang and Yano 2020 p.14). In response to the extraordinary situation in Türkiye, The Council of Higher Education (The Council of Higher Education, 2020) announced a three-week suspension of education in higher education institutions starting from March 16, 2020. With the press release issued by the president of The Council of Higher Education on March 18, 2020, the "Pandemic Period Distance Education Applications Roadmap" was created and approved by the Executive Board and put into effect. As of March 23, 2020, "emergency distance education process" has started in universities in Türkiye due to the pandemic.

Many countries used online platforms in emergency distance education during this period. One of the countries using online platforms is Türkiye. Durak, Çankaya, and İzmirli (2020), in their research covering 33 different universities in Türkiye at the higher education level in emergency distance education activities during the pandemic period, stated that the most used learning management system (LMS) at the higher education level was Moodle and ALMS (Advancity Learning Management System) and concluded that these systems were followed by Microsoft Teams, UBYS (University Information

Management System) and Toltek LMS (p.798). They also found that the most preferred live tutoring software was Big Blue Button, an open source and free software (p.799).

Some countries (Argentina, China, France, Croatia, Costa Rica, Islamic Republic of Iran, Mexico, Rwanda, Saudi Arabia, Senegal, Spain, Peru, Thailand, Vietnam) managed the process by delivering educational content to students and parents through online synchronous courses or Massive Open Online Courses (MOOCs) (Chang and Yano 2020 p.14). Course content was also delivered through television and other media. In a few countries (Costa Rica, Islamic Republic of Iran, and Thailand), the use of pre-pandemic applications was continued to maintain teacher-student communication (Chang and Yano 2020 p.14).

In general, the success of the education realized in the distance education process depends on factors such as faculty members, students, information technologies and university support (Volery & Deborah, 2000 p.222). With the transition to distance education caused by the pandemic worldwide, existing distance education systems for higher education institutions have started to be rethought. With the pandemic, higher education institutions have accelerated the identification of strengths and shortcomings in the pedagogical field, which has been planned to be researched for some time in distance education, and have needed to question and re-evaluate many factors such as the existing structures of institutions, learning, campus life, vision and mission (Deshmukh, 2021 p.131). The process has revealed that not only quantity but also quality is important in distance education (Can, 2020 p.11). Teachers are one of the most important factors determining the success of the distance education process. Teachers' distance education experiences in emergency distance education can play an important role in the development and improvement of these systems in the future.

Research on this issue is important both for emergency distance education and for distance education activities in general. Various studies have been conducted on emergency distance education during the pandemic period. In his research, Sayan (2020) examined the opinions of the lecturers working in the Faculty of Education of a state university in Istanbul and the Faculty of Health Sciences of a foundation university and teaching their courses with distance education method. When the research findings were examined, it was seen that the lecturers thought that the distance education method was not suitable for applied courses, generally preferred synchronous courses, and had problems with technological support and preferred software. In addition, they think that both they and their students have concerns about motivation (p. 117). The

majority of the lecturers (78%) stated that they could not get the course efficiency they received from face-to-face education and only 17% of the lecturers participating in the study wanted to continue teaching with distance education after the pandemic (118).

Yavuz, Kayalı, Balat and Karaman (2020) examined the activity reports of 189 universities for the Covid-19 period in their research aiming to reveal the current situation regarding the teaching activities carried out in higher education institutions during the pandemic process (p.133). The findings of the research showed that simultaneous tools were preferred in conducting courses. When the technical support services provided to lecturers were analyzed, it was found that these trainings were provided through educational videos, educational guides and online training services (p.138).

Kurnaz and Serçemeli (2020) aimed to determine the perspectives of lecturers teaching in the field of accounting during the Covid-19 pandemic period; their perspectives on the distance education system, their self-efficacy regarding the distance education system, and their opinions on accounting courses conducted with the distance education system (p.263). The research sample consists of 101 lecturers working in the field of accounting at universities in Türkiye (p.272). When the research findings were analyzed; it was seen that more than half of the lecturers did not have any online / distance education teaching experience. It was stated that there was a need for make-up programs for accounting courses after the pandemic (284).

Adnan and Anwar (2020) examined the attitudes of Pakistani higher education students towards compulsory distance education courses passed during the Coronavirus (Covid-19). It was observed that online learning did not yield the desired results in achieving the objectives of the curriculum. Lack of face-to-face interaction with F.M., response time, and lack of socialization among students in face-to-face education were other important issues emphasized by students.

In this study, Dhawan (2020) emphasized the importance of online learning and analyzed the strengths, weaknesses, opportunities and challenges (SWOT) of distance learning methods in times of crisis. In addition, the study shed light on the growth of educational technology initiatives during pandemics and natural disasters and provided recommendations to academic institutions on how to deal with the challenges faced in online learning. The common result of the researches is that many problems have been experienced in the process of emergency and distance education. The experiences of Faculty Members (F.M.) in emergency distance education can provide important clues for the development of these systems in case such situations recur. In order to solve

these problems, it is important to take the opinions of the teachers in the distance education process and examine their experiences. This research, which aims to determine the experiences of the F.M. who continue their teaching activities in higher education institutions with distance education applications, which were urgently and compulsorily switched to distance education during the pandemic process, is considered to be very important in terms of revealing the current situation and providing guidance in the transition to any crisis period that may be experienced in the future.

The aim of this research is to determine the distance education experiences of lecturers teaching at a state university during the pandemic process. The sub-objectives developed to achieve the aim of the research are as follows:

Faculty Members'

1. what are their experiences about distance education?
2. what are their opinions about the Learning Management System (LMS) they use in distance education?
3. what are their views on the synchronous teaching they realized in distance education?

METHOD

Research Model

Qualitative method was preferred in conducting the research. The reason why the qualitative method was preferred in the research was to go into details based on the experiences of the lecturers and to facilitate access to the basics of the subject. The research was conducted with a phenomenology design. Phenomenology is a method that focuses on evaluating lived experience (Jasper, 1994).

Population and Sampling

The qualitative research data consisted of 30 academic staff selected from the research population on a voluntary basis at a state university. The number of people for qualitative research was carried out until the answers given by the participants turned into repetition. The number of interviews was terminated when similar answers were received after a while. Whether the sample size in qualitative research is one (N=1), fifty (N=50) or one hundred (N=100), the basic rule for an ideal sample size is the repetition cycle that occurs as the information reaches saturation. At some point, the new sample will provide the same data as the sample in previous parts of the study (Morgan & Morgan, 2008). In this case of repetition, the data collection phase of the research should

be stopped, and the sample size should be fixed at the point where the repetition was first observed (Onwuegbuzie & Collins, 2007). The demographic information of the 30 faculty members who participated in the qualitative part of the study is given in Table 1.

Table 1: Demographic Information of the F.M. Participating in the Qualitative Research

Gender	<i>f</i>	%	Age	<i>f</i>	%
Woman	20	66,7	35-40	6	20,0
Male	10	33,3	41-50	19	63,4
			51-55	5	16,6
Title	<i>f</i>	%	Faculty	<i>f</i>	%
Professor	2	6,7	Education	12	40,0
Associate Professor Doctor	11	36,6	Fine Arts	4	13,3
Doctor Faculty Member	9	30,0	Engineering	4	13,3
Lecturer Doctor	2	6,7	Departments Affiliated to the Rectorate	2	6,7
Teaching Assistant	6	20,0	Sport Sciences	1	3,4
Type of Course They Teach	<i>f</i>	%	School of Foreign Languages	4	13,3
Linguistics	7	23,3	Vocational Schools	3	10,0
Science	9	30,0	Academic Experience	<i>f</i>	%
Fine Arts	4	13,3	6-10 Years	3	10,0
Social Sciences	9	30,0	11-15 Years	4	13,3
Sport Sciences	1	3,4	16-25 Years	19	63,4
			26 Years and Over	4	13,3

When Table 1 is analyzed, it is seen that the demographic characteristics of the participants are as follows: 66.7% female and 33.3% male in terms of gender, 20.0% 35-40, 63.4% 41-50 and 16.6% 51-55 in terms of age groups.

Data Collection Tools

In this study, a form containing demographic information was used as a data collection tool. In order to determine the experiences of the F.M. about distance education, a semi-structured interview form prepared by the first researcher was used. Information about the measurement tools is given below.

Semi-structured Interview Form for F.M.' Experiences Related to Distance Education During the Pandemic Period

The interview form developed for the collection of qualitative data in the study was developed by reviewing the literature. In order to determine the comprehensibility of the questions in the developed interview form, it was submitted to the opinions of 5 lecturers teaching in the Departments of Educational Administration, Computer and Instructional Technology Education, Curriculum and Instruction, Turkish Language and Education, Measurement and Evaluation in Education. As a result of the expert opinions, a pilot application was made to two faculty members teaching at the Faculty of Fine Arts and the Faculty of Education, and the interview form was organized by taking into account the opinions and suggestions obtained and re-submitted to the opinions of 7 lecturers. The evaluations were made by lecturers working in the Departments of Computer Education and Instructional Technologies, Curriculum and Instruction, Turkish Language and Education, Measurement and Evaluation in Education, and Informatics. Necessary arrangements were made based on the feedback and the interview form was finalized.

In the first part of the interview form developed to collect qualitative data in the study, seven questions were included to determine the demographic characteristics of the lecturers. In the second part, three open-ended questions were asked about the experiences of the lecturers regarding distance education courses during the pandemic period, to express their views on the learning management system (Moodle) used at the university, and to share the views of the lecturers on the synchronous course system. The open-ended questions and exploratory questions asked to the teachers during the interview are given below:

1. What are your experiences with the distance education courses you taught during the pandemic?

- *What type of course do you think is suitable for distance education?*
- *Can you talk about your experiences in finding/developing online course content and materials in the distance education process?*
- *What are the assessment tools you used in the distance education process (homework, project, presentation, online multiple-choice test, open-ended*

exam, quiz, portfolio, etc.) and why did you prefer these assessment tools?

- *What are your opinions about the technical support and training of trainers assistance services available in the institution where you work in the distance education process?*
- *What are your thoughts about your interactions with students during the distance education process?*
- *After the pandemic, how would you prefer to integrate the LMS into your courses, that is, to use it as a hybrid (face-to-face + online)?*

2. What are your opinions about the LMS (Moodle) that you are using during the pandemic process at the university where the research was conducted?

- *What are the reasons for using the LMS?*
- *How is the ease of use of the management panel features of the LMS?*
- *Ease of Use of LMS Assessment and Grading Features*

3. What are your views on the synchronous teaching (with Zoom) you realized in the distance education process during the pandemic process?

- *Did you do a trial lesson before starting online lessons?*
- *What are your online classroom rules for your live lessons?*
- *How do you approach time management in live lessons?*
- *What are your views on student-teacher interaction in live lessons?*
- *What are the problems you experience while continuing your teaching activities during live lessons?*

Data Collection Process

An application was made to the Social Sciences and Humanities Ethics Committee at the university where the research was conducted and an "Ethics Committee Approval Report" was obtained in order to interview the lecturers. In order to reach the lecturers, they were contacted using the e-mail addresses on the university website and informed about the purpose, scope and process of the research and asked for permission to contribute to the research on a voluntary basis.

For those who stated that they would participate in the semi-structured interview from the lecturers contacted by e-mail, an appointment was made for the day and time they were available. In the research, the interviews were conducted through the Zoom application, which offers the opportunity to hold synchronous meetings in a virtual environment due to the pandemic, and the semi-structured interview form prepared by the researcher was applied by

sharing the screen with the participants. When open-ended interview questions were asked, the answers were recorded by screen recording method with the approval of the participant lecturer.

Data Analysis

Analyses were carried out on the data collected in order to examine the experiences of the F.M. towards distance education. Qualitative data were analyzed by content analysis method. Content analysis enables in-depth analysis of the collected data and reveals themes and dimensions that were previously unclear. The main purpose of this analysis method is to reach concepts that can explain the collected data. In content analysis, there are four stages that need to be carried out in order to obtain in-depth information: Coding the data, finding themes, organizing codes and themes, defining and interpreting the findings (Yıldırım & Şimşek, 2003).

In order to ensure consistency in the thematic coding process, it is necessary to pay attention to whether the data under the emerging themes form a meaningful whole (Yıldırım & Şimşek, 2003). In this study, after the data obtained from the interview questions were analyzed and thematic coding was created, the opinion of a teacher with a master's degree in educational administration was taken to ensure consistency. The codes and themes were discussed by the first author of this study and the teacher and reorganized in line with the common views. In the analysis of qualitative data, Miles and Huberman (1994) reliability formula was used ($\text{Reliability} = \frac{\text{Agreement}}{\text{Agreement} + \text{Disagreement}}$) and the agreement between the coders was 89.9%.

In the analysis of qualitative data, the total number of instructor opinions given in the analysis processes may be different due to the fact that the participants expressed opinions in accordance with more than one theme. The findings were explained and interpreted by including direct quotations from the lecturers' statements. While including the statements of the F.M. in the study, codes as Faculty Member (F.M).1, F.M.2... F.M.30 were used for each instructor according to the order of participation in the study.

RESULTS

The findings obtained by analyzing the data obtained from 30 F.M. participating in the study are summarized below in the order of the research objectives.

Experiences of Faculty Members on Distance Education during the Pandemic Period

The type of course that they think is suitable for distance education

The findings obtained from the question about the types of courses that the F.M. think are appropriate to be given through distance education are shown in Figure 1.

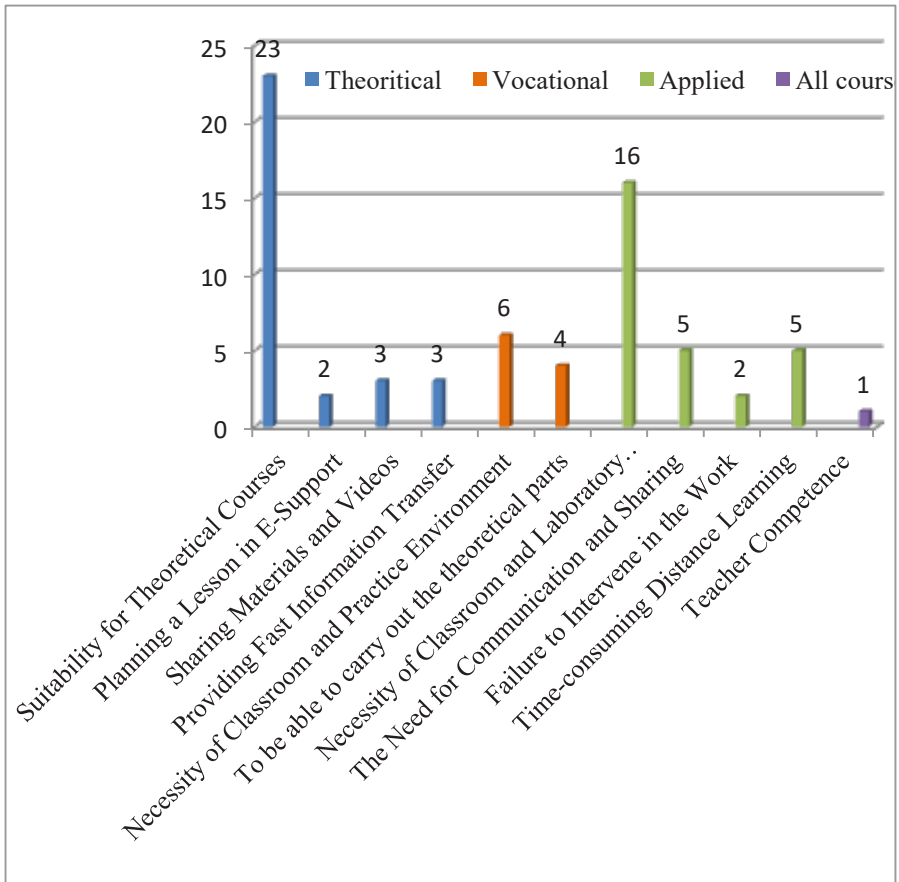


Figure 1: Types of courses that F.M. think are suitable for distance education

As can be seen in Figure 1, the responses of the F.M. to the question about the types of courses that are suitable for distance education are grouped under the themes of "theoretical courses", "vocational courses", "applied courses" and "all types of courses". In the "theoretical courses" group, the highest frequency belongs to "suitability for theoretical courses" (n=23). In the "vocational courses" theme, the highest frequency was "the necessity of classroom and practice environment" (n=6). In the "Applied courses" theme, the highest frequency was "the necessity of classroom and laboratory environment" (n=16). For the theme of "all types of courses", the code "teacher competence" (n=1) was formed.

Some of the answers obtained through open-ended questions are given below to support these views.

Faculty Member (FM) 1 "Lessons based on theoretical subjects are better. Information sharing and live lesson sharing are more healthy and systematic. The Learning Management System enables us to plan our lessons every week. Thus, we can control ourselves through the system. We recommend resources to students in face-to-face lessons, but they do not buy them. Since we upload our files and lessons weekly, the student does not have the option of not being able to access the resource and provides easy access and access. Students who cannot attend the lesson can attend the lesson later and follow the lesson and use their time effectively."

Faculty Member (F.M.)2 "It can be given especially in theoretical courses at the university level and in the theoretical parts of vocational courses. I had this idea by using it myself during the pandemic period. Because I can find materials and videos related to the lesson from the internet during the live lesson and present them. Turning on the computer and connecting to the internet in the classroom environment can cause waiting and loss of time. In the future, I would like to present the theoretical parts of my courses through distance education."

Their experiences in finding/developing online course content and materials in distance education process.

The findings from the F.M.' experiences of finding/developing online course content and materials in the distance education process are shown in Figure 2.

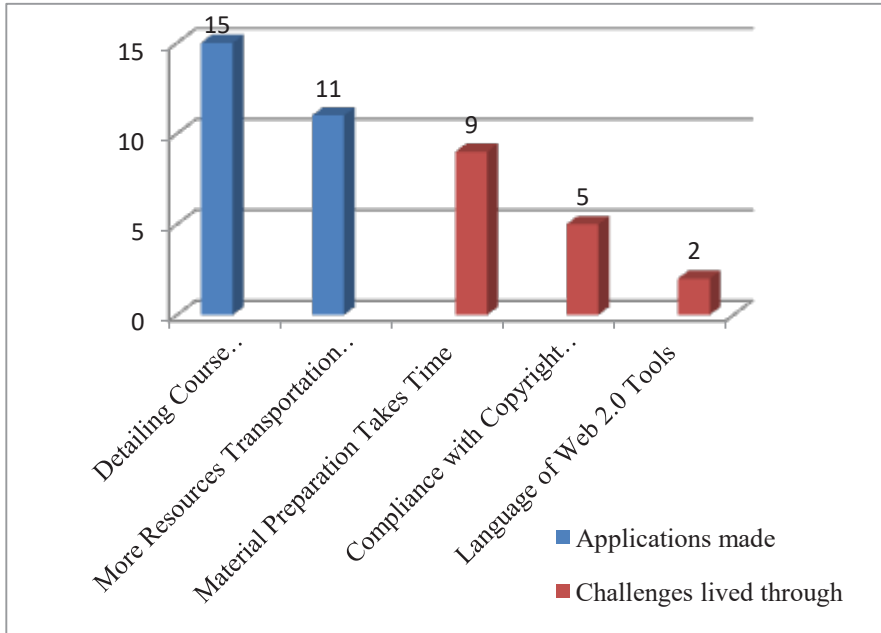


Figure 2: F.M.' Experiences on Finding/Developing Online Course Content and Materials in the Distance Education Process

In Figure 2, F.M.' experiences in finding/developing online course content and materials in the distance education process are categorized under the themes of "practices" and "difficulties experienced". In the "Practices" group, the highest frequency belongs to "elaborating course reflections/notes" (n=15). This code was followed by "providing more resources to students" (n=11). In the "difficulties experienced" theme, the highest frequency was "taking time to prepare materials" (n=9). "Complying with copyright rules and ethical principles" (n=5).

Some of the answers obtained through open-ended questions are given below to support these views.

F.M.4 "Preparing course materials in distance education was time consuming and tiring. Since there may be copyright problems, it was important to share within the framework of ethical principles."

F.M.10 "I tried to choose materials for the group I was teaching, that is, according to their branches and fields. I saw that this increased students' interest and motivation towards the course. I supported our lessons with visual materials, research articles and videos. Many studies in the field are in English, so I tried to provide visual-oriented materials to classes that may have language problems. I see the fact that some resources are encrypted and paid as an issue that needs to be overcome."

Measurement tools they prefer in the distance education process

The findings obtained from the experiences of the F.M. regarding the measurement tool they prefer in the distance education process are shown in Figure 3.

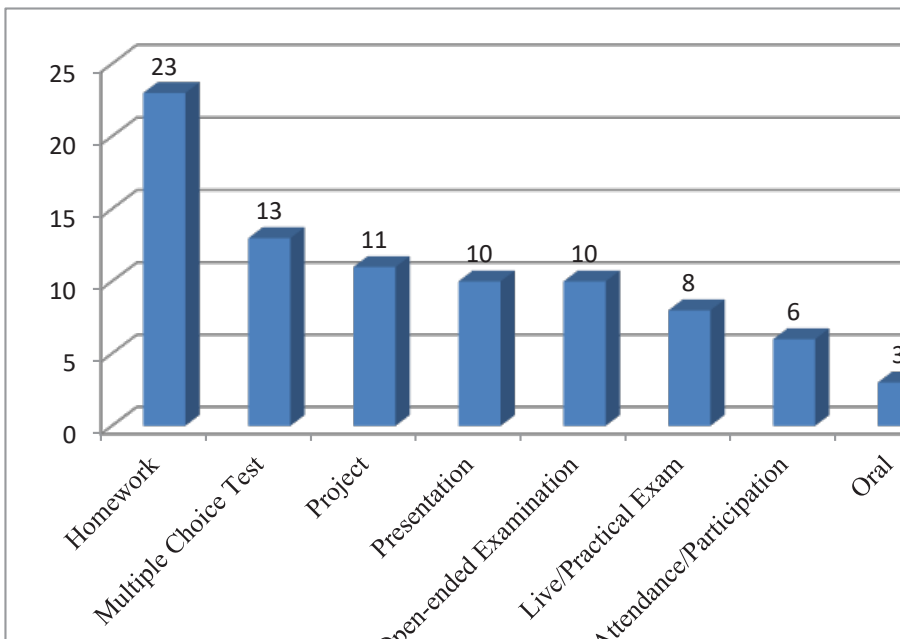


Figure 3: Measurement Tools Preferred by F.M. in Distance Education Process

In Figure 3, the answers given to the question regarding the measurement tool preferred by the F.M. in the distance education process are grouped under the titles of "homework" (n=23), "multiple choice test" (n=13), "project" (n=11), "presentation" (n=10), "open-ended exam" (n=10), "live/practical exam" (n=8), "class attendance/participation" (n=6) and "oral" (n=3).

Their views on the technical support and train-the-trainer assistance services available in their institutions during the distance education process

Their views on the technical support and train-the-trainer assistance services available in their institutions during the distance education process are shown in Figure 4.

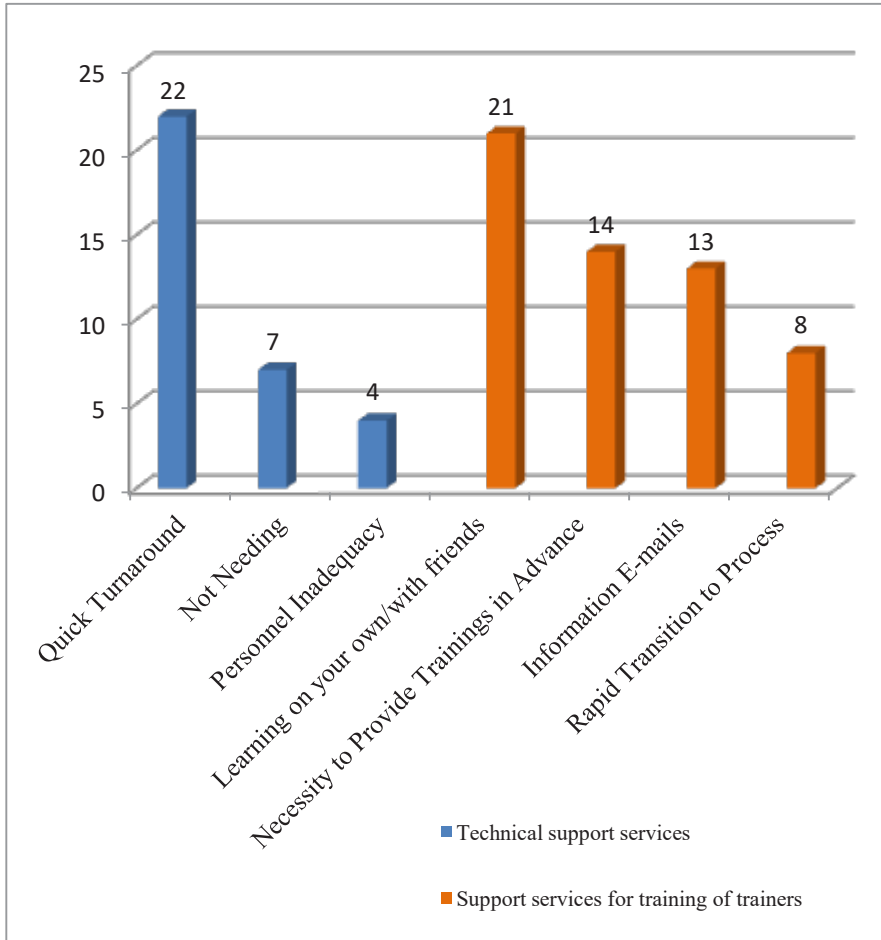


Figure 4. F.M.' views on the technical support and train-the-trainer assistance services available in their institutions during the distance education process

In Figure 4, the responses of the lecturers to the question regarding their opinions on the technical and train-the-trainer support services available in their institutions during the distance education process are grouped under the themes of "technical support services" and "support services for training of trainers". In the "technical support services" group, the highest frequency belongs to "providing quick response" (n=22). This code was followed by "not needing"

technical support (n=7). In the "Support services for training of trainers" theme, the highest frequency was "learning on your own/with friends" (n=21). "The necessity to provide trainings in advance" (n=14) and "informational e-mails" (n=13) were the next most frequent.

Some of the answers obtained through open-ended questions are given below to support these views.

F.M. 7 "Whenever I needed to write to the Distance Education Center (UZEM) about my problem, I was able to get an instant response and I received the same opinions from the students. It was functionally ready."

F.M. 10 "UZEM was working 24/7 on this issue. There were also information e-mails all the time. Since it was a functioning system, it was not necessary."

Their Experiences on Interactions with Students in Distance Education Process

The experiences of the F.M. regarding their interactions with the students in the distance education process are shown in Figure 5.

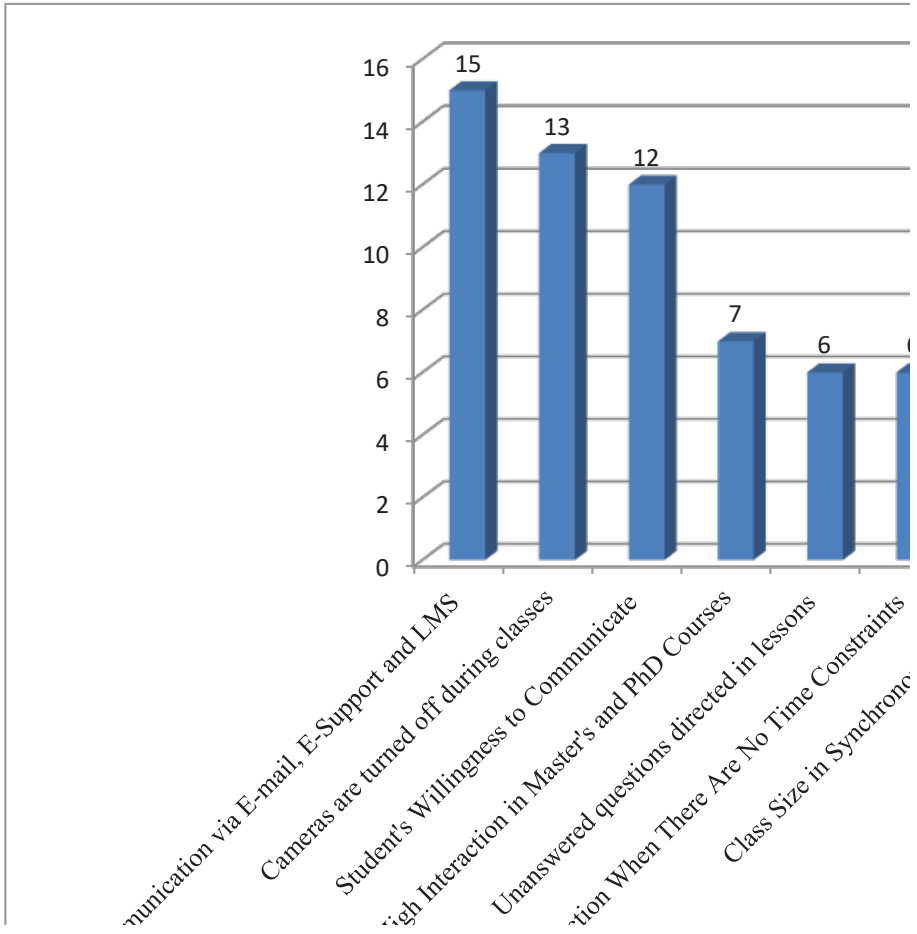


Figure 5: F.M.' Experiences Regarding Their Interactions with Students in the Distance Education Process

In Figure 5, it is seen that the highest frequency of F.M.' experiences regarding their interaction with students in the distance education process is "continuous communication via e-mail, LMS and Student Information System (SIS)" (n=15), "cameras being turned off in classes" (n=13) prevents interaction, "student's willingness to communicate" (n=12) is a factor that

determines and directs interaction, "high interaction in master's and doctoral courses" (n=7) is provided and they have positive opinions.

Some of the answers obtained through open-ended questions are given below to support these views.

F.M. 3 "I usually interact with students via e-mail in face-to-face teaching as well, as it is faster. I constantly monitor and check my e-mails and get back to my students quickly. I frequently monitored my LMS, LMS and e-mails during the distance education process to see if there were any student messages. Our interaction accelerated. When I was at school, I could not spare much time because of the classes. Students also started to use their e-mail accounts actively in this process."

F.M. 23 "The student did not want to communicate. We are not like in face-to-face education, we are in different worlds systematically, we do not know each other."

Preferences for Integrating the LMS into their Courses after the Pandemic

The responses of the lecturers to the question about how they would prefer to integrate the LMS into their courses after the pandemic, that is, to use it as a hybrid, are presented in Figure 6.

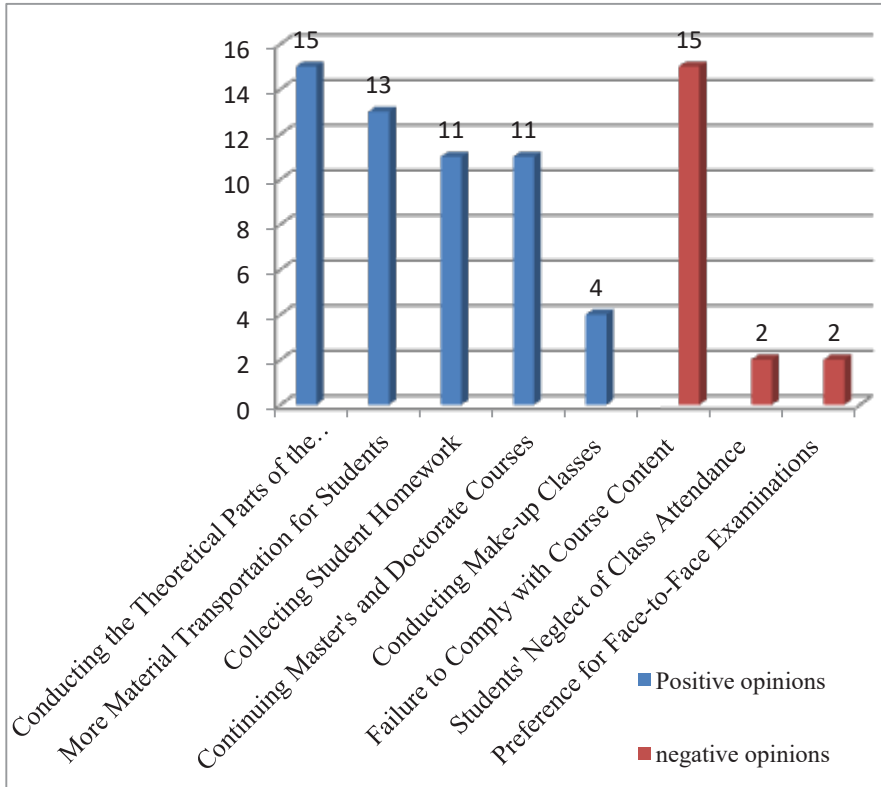


Figure 6: F.M.' Preferences for Integrating the LMS into their Courses after the Pandemic

The responses of the lecturers to the question about how they would prefer to integrate the LMS into their courses after the pandemic, that is, to use it in a mixed (face-to-face + online) way, were grouped under the themes of "positive opinions" and "negative opinions". In the "positive opinions" group, the highest frequencies were "conducting the theoretical parts of the courses" (n=15), "delivering more materials to students" (n=13), "collecting student assignments" (n=11), "conducting master's and doctoral courses" (n=11) and "conducting make-up courses" (n=4). In the "negative opinions" group, the frequencies of "not complying with the course content" (n=15), "neglecting students' course

follow-up (material sharing/announcements in e-support)" (n=2) and "preference for face-to-face performance of exams" (n=2) were found.

Some of the answers obtained through open-ended questions are given below to support these views.

F.M. 7 "I think that the most appropriate method for our faculty is face-to-face. I also think that we can gradually move to the normalization process. We are a department that does a lot of activities outside the classroom. We can count these activities as online. I think I will use my LMS for material sharing because I realized that the system is really functional and we have deficiencies in its use. This system will always be in our lives."

F.M. 19 "I would like to use it afterwards. It can be mixed or completely distance education. One breaks the prejudice as one gets used to it. Maybe it will feel strange when you switch to face-to-face."

Tools Used by F.M. in Distance Education Activities During the Pandemic Period

The frequency and percentage values of the responses of the F.M. participating in the study regarding the communication tools used in distance education during the pandemic period are given in Table 2.

Table 2: Communication Tools Used by F.M. during the Pandemic Period

Communication Tools Used by F.M.	<i>f</i>	%
Email	25	83,3
Knowledge production sharing tools (blog, wiki, Google classroom, Moodle)	2	6,6
Social networks (facebook, twitter,...)	3	10,0
Chat tools (zoom, skype, hangout,...)	24	80,0
Mobile applications	24	80,0

During the pandemic period, 25 out of 30 F.M. (83.3%) preferred to use e-mail and 24 (80%) preferred to use chat tools and mobile applications for communication with students.

2. F.M.' Opinions Regarding the Learning Management System They Used in Distance Education During the Pandemic Period

Reasons for Using a Learning Management System (LMS)

The frequency and percentage values of the responses of the F.M. participating in the study regarding the reasons for using LMS in distance education during the pandemic period are given in Table 3.

Table 3: Reasons for Using a LMS

Reasons for Using Learning Management System	<i>f</i>	%
Compulsory due to the pandemic	30	100,0
To be able to maintain interaction with my students during the teaching process	30	100,0
Defining activities/tasks/assignments for my students within the course	30	100,0
Delivering course materials to my students that they can benefit from within the scope of my course	30	100,0
To be able to access the work done by my students within the scope of the course	30	100,0

When the table is examined, 100% of the lecturers stated that they use the LMS compulsorily due to the pandemic, in order to maintain interaction with my students during the teaching process, to define activities/tasks/assignments for my students within the scope of the course, to deliver the course materials that my students can benefit from within the scope of my course, and to access the work done by my students within the scope of the course. In addition to the reasons given above.

F.M. 7 stated that "I also used it to guide the students."

Ease of Use of Learning Management System Management Panel Features

The frequency and percentage values of the responses of the F.M. participating in the study regarding the ease of use of the management panel features of the LMS they used during the pandemic are presented in Table 4.

Table 4: Ease of Use of Learning Management System Administration Panel Features

Ease of Use	Did not use it		Easy		Medium		Difficult	
	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%
Administration Panel Features								
Providing access to the course website	0	0,0	25	83,3	4	13,3	1	3,33
Create a personal profile	2	6,66	20	66,6	5	16,6	3	10,0
Using the timetable	1	3,33	21	70,0	7	23,3	1	3,33
Source upload	0	0,00	21	70,0	6	20,0	3	10,0
Permits	1	3,33	20	66,6	6	20,0	3	10,0
Add/delete users	2	6,66	18	60,0	6	20,0	4	13,3
Engagements	12	40,0	10	33,3	4	13,3	4	13,3
Question bank	3	10,0	12	40,0	5	16,6	10	33,3
Edit settings	0	0,00	20	66,6	7	23,3	3	10,0
Notebook	10	33,3	13	43,3	6	20,0	1	3,33
Reports	6	20,0	13	43,3	10	33,3	1	3,33

When the table regarding the management panel features of the LMS is analyzed, 40% of the F.M. stated that they never used the engagement and 33.3% stated that they never used the gradebook features. Among the management panel features, accessing the course site (83.3%), using the course calendar (70%), uploading resources (70%, creating a personal profile (66.6%), permissions (66.6%) and editing settings (66.6%) were evaluated as easy to use. On the other hand, 33.3% of the F.M. found the question bank feature difficult to use.

Ease of Use of the Evaluation and Grading Features of the Learning Management System They Used During the Pandemic

The frequency and percentage values of the responses of the F.M. participating in the study regarding the ease of use of the evaluation and grading features of the LMS they used during the pandemic are presented in Table 5.

Table 5: Ease of Use of Learning Management System Assessment and Grading Features

Ease of Use	Did not use it		Easy		Medium		Difficult	
	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%
Communication Tools								
Edit exam settings	0	0,00	16	53,3	9	30,0	5	16,6
Create and upload questions	2	6,66	8	26,6	9	30,0	11	36,6
Adding an assignment	1	3,33	26	86,6	2	6,66	1	3,33
Giving feedback on assignments	1	3,33	16	53,3	5	16,6	8	26,6
Entering a note	6	20,0	17	56,6	2	6,66	5	16,6

When Table 9 is analyzed, 86.6% of the F.M. found it easy to add assignments and 56.6% found it easy to enter grades. 36.6% of the F.M. found it difficult to create and upload questions and 26.6% found it difficult to give feedback on assignments.

3. Opinions of F.M. on Synchronous Teaching in Distance Education During the Pandemic Period

Within the scope of the research, the data obtained from seven open-ended interview questions directed to the F.M. in order to determine their views on the synchronous teaching they carried out in distance education during the pandemic period were analyzed and summarized below.

The data obtained from the open-ended interview questions were analyzed by content analysis method, and the findings were supported by the opinions of the participants regarding each question, although they were reflected as figures.

F.M.' Opinions on Conducting Trial Lessons Before Starting Synchronous Courses

The frequency distributions prepared in line with the common opinions of the lecturers on the question of whether they conducted a trial lesson in the live lesson application to be used before starting simultaneous lessons and the graph created as a result of the coding of these opinions are given in Figure 7.

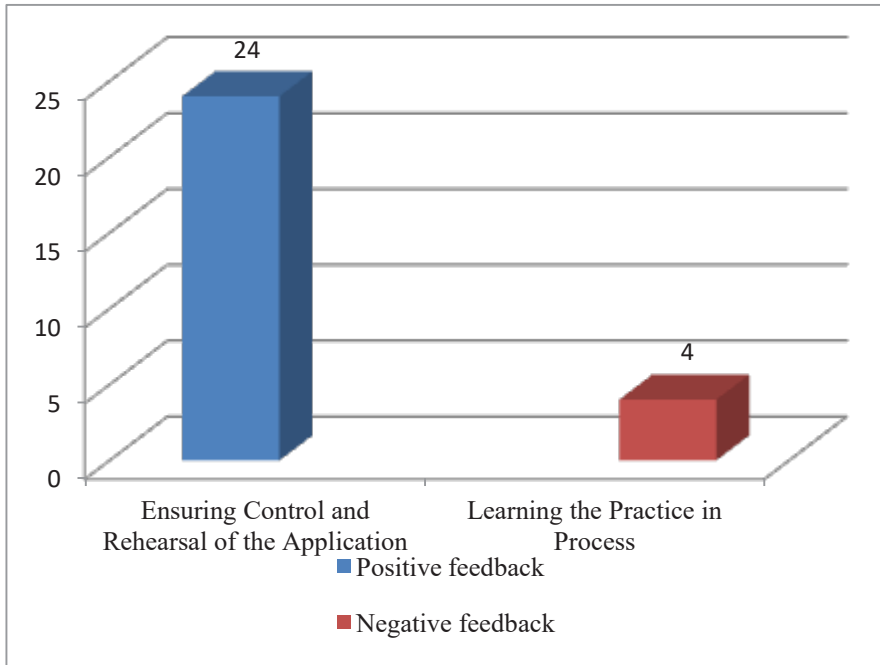


Figure 7: F.M.' Opinions on Conducting a Trial Course Before Starting Synchronous Courses

As can be seen in Figure 7, the responses of the F.M. to the question about whether they conducted a trial lesson in the live lecture application to be used before starting the synchronous lessons were grouped under the themes of "positive" and "negative". The highest frequency in the "positive" group belongs to "providing control and rehearsal of the application" (n=24). In the "negative" group, the highest frequency belongs to "learning the application in the process" (n=4).

Some of the answers obtained through open-ended questions are given below to support these views.

F.M. 2 "Before starting the lessons in the distance education process, we opened the Zoom application with a teacher and controlled it."

F.M. 5 "Before starting the lessons in the distance education process, I made various trial interviews with my son and friends. First, I watched all the details of the Zoom application on Youtube, took notes and learned. I checked and rehearsed the Zoom application before the live lessons."

F.M.' Opinions on Determining Classroom Rules for Synchronous Courses

The frequency distributions prepared in line with the common opinions given by the F.M. in response to the question on whether they set classroom rules for concurrent courses and the graph created as a result of the coding of these opinions are given in Figure 8.

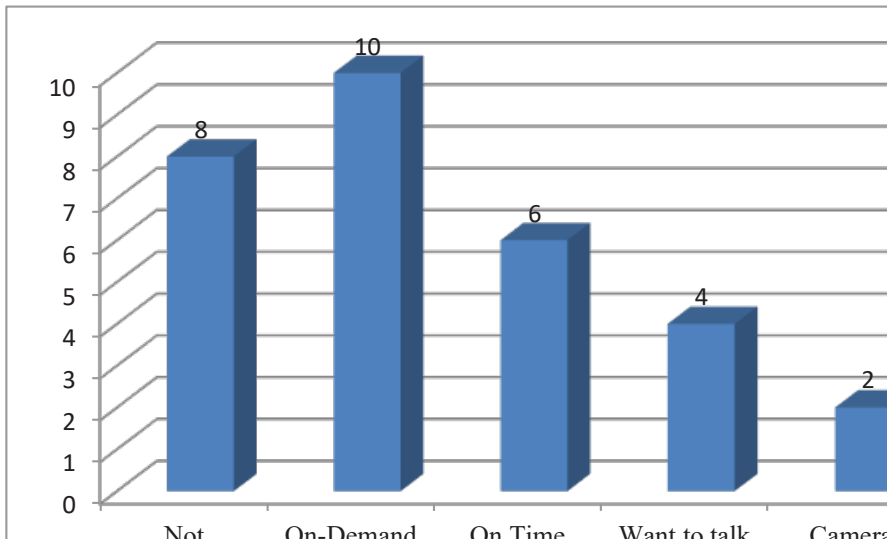


Figure 8: F.M.' Opinions on Determining Classroom Rules for Synchronous Courses

In Figure 8, the highest frequency ($n=10$) of the F.M.' responses to the question about setting classroom rules for synchronous lectures are grouped under the themes of "optional audio and visualization" followed by "did not set" ($n=8$), "on-time attendance" ($n=6$), "finger raising and chat use" ($n=4$) and "camera use" ($n=2$). Examples of the responses given by the F.M. are given below.

F.M. 7 "I tried to encourage students to participate in the lessons and turn on their cameras, not as a rule, but as a request. Students were reluctant to turn on their cameras."

F.M. 16 "Unfortunately, I did not have any lesson rules. Because students were free to participate in the lesson. We did not have any obligation for camera and microphone. Most participants did not turn on the camera. They participated in the lesson as if they were watching television. For this reason, they were passive."

F.M.' Opinions on Time Management in Synchronous Courses

The frequency distributions prepared in line with the common opinions given by the F.M. to the question on how they ensure time management in concurrent courses and the graph created as a result of the coding of these opinions are given in Figure 9.

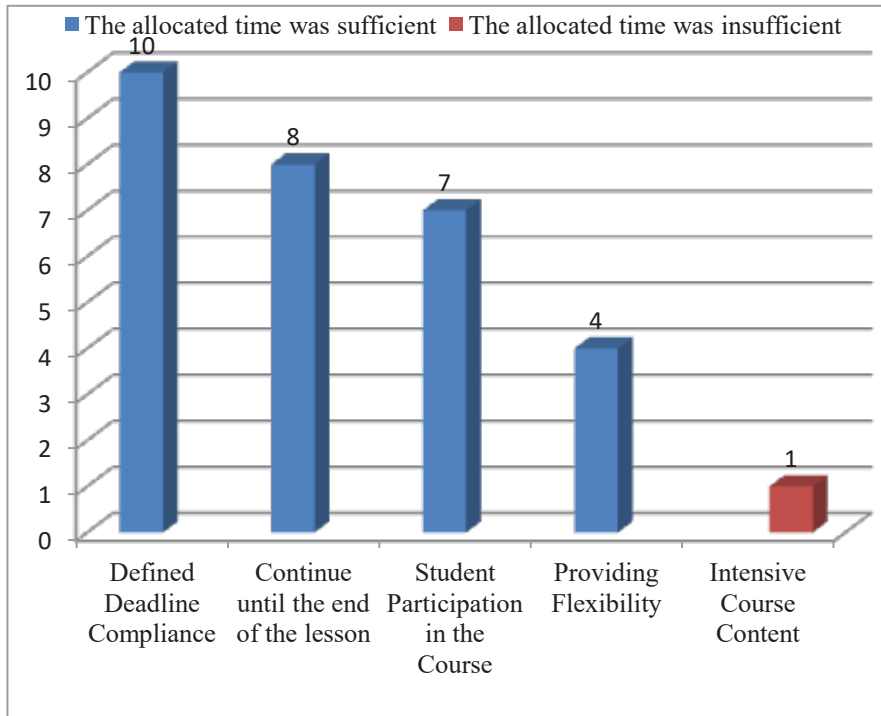


Figure 9: F.M.' Opinions on Time Management in Synchronous Courses

In Figure 9, the responses of the lecturers to the question on how they ensured time management in concurrent courses are grouped under the themes of "the allotted time was sufficient" and "the allotted time was insufficient". The highest frequency in the "the allotted time was sufficient" group belongs to "adhering to the allotted time" (n=10). This group is followed by "continuing until the end of the lesson" (n=8), "student participation in the lesson" (n=7) and "providing flexibility" (n=4). The theme of "the defined time was insufficient" was followed by "intensive course content" (n=1).

Examples of the responses given by the F.M. are given below.

F.M. 15 "Lesson durations may vary depending on the student's participation in the live lesson. Some topics may exceed the lesson time with the question-answer interaction in the lesson or may be shorter than the lesson time

on days when there is no participation. I have not set any standards in this regard. If the student enjoys the lesson, I can continue my lesson."

F.M. 19 "The university had set the required class times. I followed these hours, but I did not have any limitations on the duration of the lesson, the lesson was prolonged when it should have been prolonged."

F.M.' Views on Student-Teacher Interaction in Synchronous Courses

The frequency distributions prepared in line with the common views given by the F.M. to the question about their views on student-teacher interaction in synchronous courses and the graph created as a result of the coding of these views are given in Figure 10.

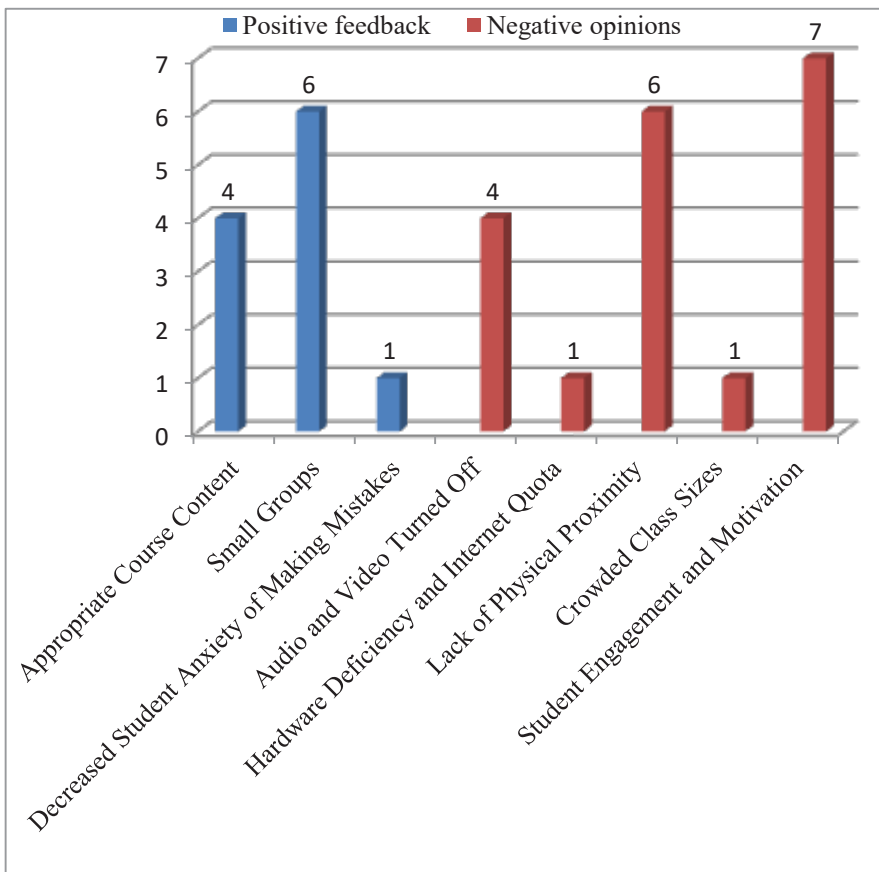


Figure 10: Opinions of F.M. on Student-Instructor Interaction in Synchronous Courses

In Figure 10, the responses of the F.M. to the question about their views on student-teacher interaction in synchronous courses are grouped under the

themes of "positive opinion" and "negative opinion". The highest frequency in the "positive opinion" group belongs to "small groups" (n=6). This group is followed by "the course content is appropriate" (n=4) and "students' anxiety about making mistakes is reduced" (n=1). In the "negative opinion" theme, "student participation and motivation" (n=7) has the highest frequency value. This is followed by "lack of physical proximity" (n=6), "audio and video off" (n=4), "lack of hardware and internet quota" and "large class size" (n=1). Examples of the responses given by the F.M. are given below.

F.M. 2 "The videos I showed in live lessons were liked by the students. I thought it motivated them and this motivation made them interact. Those who were interested in the lesson interacted more."

F.M. 18 "Since the microphone and camera were turned off, I could not get an answer when I asked questions, so the interaction remained at a low level. I think the students opened the lesson and left the screen."

Problems Experienced by F.M. During Synchronous Lectures

The frequency distributions prepared in line with the common opinions given by the lecturers to the question about the problems they experienced during the synchronous course and the graph created as a result of the coding of these opinions are given in Figure 11.

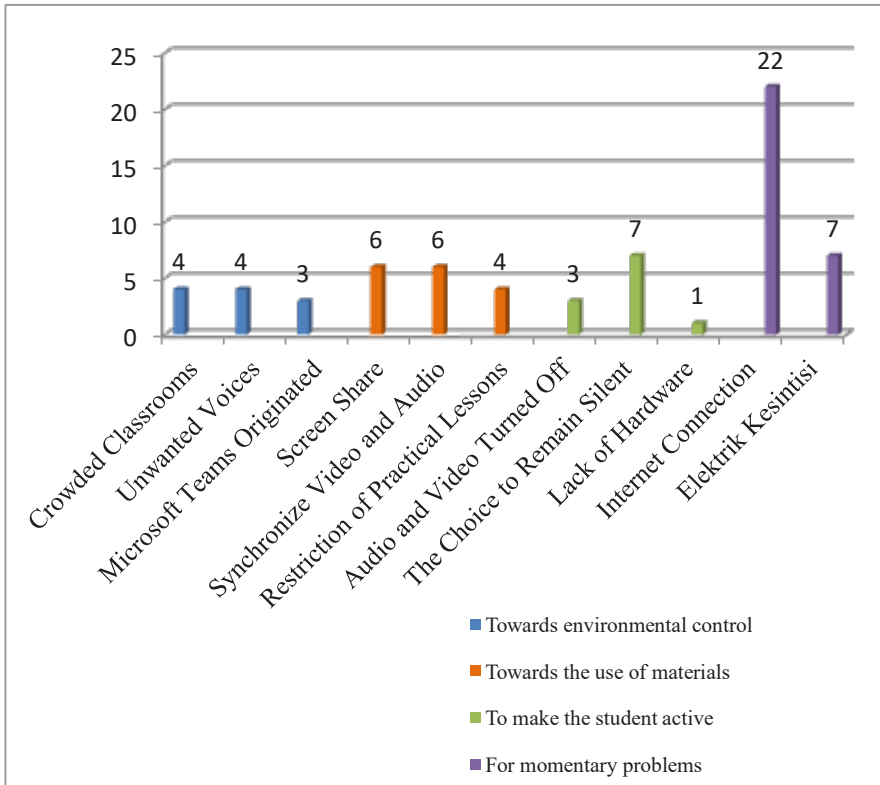


Figure 11: Problems Experienced by F.M. During Synchronous Lectures

In Figure 11, the responses of the F.M. to the question about the problems they experienced during the synchronous lesson are grouped under the themes of "for controlling the environment", "for using materials", "for activating students" and "for instant problems". The codes "crowded classrooms" (n=4), "unwanted noises" (n=4), and "team-induced" (n=3) were included in the group "for environmental control". "Screen sharing" (n=6), "synchronizing video and audio" (n=6), "limitation of making practical lessons" (n=4) were included in the "for environment control" group. "Preference to remain silent" (n=7), "audio and video off" (n=3), and "lack of hardware" (=1) were included in the theme "to make students active". In the theme "for instant problems", the highest frequency was "internet connection" (n=22), followed by "power outage" (n=7). Examples of the responses given by the instructors are given below.

F.M.16 "In technical terms, there may be cases where the connection is weak and freezes occur. Since I am not the source of these, there may be problems in their solution."

F.M.23 "When we transfer slides to the screen in Teams, it does not transfer. Or while continuing, it can get stuck on the 1st slide while I am on the 11th slide. I constantly interrupt the lesson and ask if there is a screenshot. In Zoom, students were directly connected to the live lesson and the flow of the lesson was not disrupted. In Teams, there is a constant voice notification, and it asks for permission. You have to give permission to everyone one by one. This set us back quite a bit in the first weeks. As a result of the meetings, I learned that there was a setting, and I solved this situation with that technical setting."

4. CONCLUSION AND DISCUSSION

In this study, it was aimed to determine the distance education experiences of lecturers teaching at a state university.

When the distance education experiences of the lecturers are analyzed, the type of courses that they think are suitable for distance education are theoretical courses. The necessity of classroom, laboratory and application environment for vocational and applied courses was stated. In addition, it was observed that the F.M. stated that they would prefer to use the LMS in the theoretical parts of their courses after the pandemic, and those who did not prefer to use it showed that the system was not suitable for the content of the course. This view is also supported in the literature. In a study in which the opinions of the lecturers of the Department of Basic Education regarding distance education during the pandemic period were taken, it was concluded that the lecturers who were teaching applied courses reported negative opinions compared to the lecturers who were teaching theoretical courses. It was stated that simultaneous courses were insufficient for applied courses and that they were conducted as if they were theoretical courses (Şeren, Tut, & Kesten, 2020 p.4520). The findings of the study are similar to the study conducted by Koloğlu (2016) in which the opinions of Ordu University lecturers were taken. The lecturers stated that distance education cannot be used as a learning model on its own and that it can achieve success if it is a blended education model together with face-to-face education (p.101). In this context, it is evaluated that distance education activities during the pandemic process were adopted by the F.M. as an educational environment where only the theoretical parts of the courses can be given verbally through reflections. Based on the results of this research, it is expected that lecturers who provide education other than theoretical courses will not prefer to use distance education method after the pandemic process. It is thought that the e-support platform will only be seen as a material sharing or homework collection platform.

The lecturers stated that the LMS facilitated the distance education process by making it easier to share resources and that the simultaneous lectures made the master's and doctoral courses more productive. In a study with similar findings, it was stated that the lecturers were quite satisfied with the postgraduate courses, the small number of students in this group strengthened the interaction, the fact that the camera and audio were available to all students in the lessons increased communication, and it was also convenient for students coming from other cities (Şeren, Tut, & Kesten, 2020 p.4515). It has been observed that factors such as the quality of the student group, class size and course content are factors affecting the distance education process. It can be said that graduate students, who attend face-to-face courses from different cities and professional groups, continue their education programs in line with their goals and wishes more willingly and determinedly with the distance education process. The reason for this may be the elimination of the difficulty of taking leave from the workplace and the reduction of the time and expenses spent for travel. Regarding resource sharing, this tab is considered to be easy and useful because it is easy to use and prevents unnecessary duplication.

Regarding finding and developing materials in the distance education process, the F.M. stated that they elaborate the lecture notes for the courses given by distance education in a way that the students can understand the most comfortable and simple way and that they can deliver more materials to the students thanks to the LMS. On the other hand, the lecturers emphasized that it is very difficult and time-consuming to prepare materials considering copyright and ethical rules. Bingöl (2020) stated in his study that the reconstruction of the educational designs for distance education courses by the F.M. and the adaptation of the existing course layout to the online teaching process brought a separate workload to the F.M. (p.896). Bozkurt (2020) stated in his research that the question of whether the teacher will be the sole source and provider of information in the emergency distance education process implemented during the pandemic process or whether he will assume the role of a guide and guide for students has emerged. The reason for the F.M. to update the course materials in the emergency distance education process at a level that students can read and understand outside the classroom can be seen as the lack of attendance obligation. Lecture notes have been created so that students who cannot or do not want to access synchronous lectures can succeed in exams with their own work. In this context, when the results of this study are analyzed, it can be said that the lecturers see themselves as the sole source and provider of knowledge.

In the distance education process, F.M. mostly preferred homework, multiple-choice tests and projects in the measurement and evaluation process to

determine students' success. In the study conducted by Pekcan and Toraman (2021), it was determined that teachers used the multiple-choice question technique in the distance education activities they carried out during the pandemic period. It can be said that the suspicion of the F.M. about the reliability of the measurement and evaluation process during the pandemic process led the F.M. to prefer process-oriented evaluation types. For this reason, it can be thought that they evaluate learning outcomes with performance-based studies such as homework and projects. In addition, it can be said that the fact that the LMS started to be used by the F.M. with the pandemic and the use of the question creation/exam editing modules in the system is not yet well known, caused the F.M. to prefer multiple-choice tests, which are easier to enter questions, compared to other question types.

F.M. found the technical support services provided by the LMS quite fast when they needed them, but it was stated that it was too late to provide train-the-trainer trainings for the process. Kir (2020) stated that the support services to be prepared for the training of trainers should be flexible and applicable. In addition, it is also important that the training topics to be given are up-to-date, interesting and adaptable. F.M. should be able to assume different identities such as researcher, facilitator, counselor and supervisor in addition to their own needs within the scope of the support services to be provided (p.157). We can see the lack of and insufficient training as a result of being caught unprepared for the pandemic process. The reason why the support could not be provided at the desired level during the process can be thought to be the lack of the necessary sub-units within the LMS. The support needed by each educator is likely to be different from each other. In this context, it is considered that it may be useful for field experts to provide the necessary individual support to F.M. by creating sub-units such as material preparation, content development, measurement and evaluation, and technical support. Based on similar results found in the literature, it is seen that training of trainers is an important factor in developing and strengthening the beliefs of instructors, who are the most important factors in the implementation of the distance education process.

Within the scope of student interactions, e-mail, e-support and Student Information System were used to keep in constant interaction with students and student questions were answered by the lecturers. The biggest obstacle to communication was the fact that students' cameras were turned off during the lectures. Students who were willing to communicate and interact were able to do so both through simultaneous lectures and communication applications. In addition, it was stated that uninterrupted communication and interaction were maintained due to the high participation in master's and doctoral courses. Arora

and Srinivasan (2020), in their study investigating the effects of the pandemic on the learning and teaching process, stated that F.M. listed the barriers to interaction as low participation in distance education courses, lack of communication and connection problems (p.43). These results support the results of the study. In the distance education process, it can be said that requiring students to attend classes and providing hardware and infrastructure are seen as important factors in interaction with students.

When the opinions of the lecturers about the LMS were examined, it was concluded that they did not need to use this system before the pandemic and also did not have enough information about the system. F.M. stated that they could easily access the LMS, send messages to students, share the course link simultaneously and add assignments. On the other hand, the lecturers think that using the question bank, creating and uploading questions, and editing exam settings are difficult. In another study, no general conclusion was reached by the lecturers about creating questions and preparing exams using the questions created by the lecturers by making use of the assessment module available within the scope of the LMS. In this context, it was stated that the LMS assessment module could be reorganized. In addition, the F.M. also stated that they had difficulties in the question bank module (Ateş & Güyer, 2016 p.11). Based on the findings of both studies, it was seen that the LMS measurement module was not sufficiently understood by the F.M. and the sub-tabs of the module were not used actively and effectively.

When the opinions of the F.M. regarding the concurrent courses were analyzed, they stated that they rehearsed the use of the system before starting the courses. The lecturers stated that the process is completely under the control and responsibility of the student since the attendance status of the students is not monitored, and that the participation in simultaneous courses, class hours, homework assignments, and sharing via the e-support system are completely under the student's follow-up. In Akkuş and Acar's (2017) study, the issue of absenteeism was emphasized in support of the results of this research and it was stated that the problem of student absenteeism could be overcome by improving the content and providing the necessary technical support to students.

As a result of the research, it was stated that there are generally no classroom rules in synchronous lessons, and it is left to the student's preference to turn on the camera and sound. In their study, Gürer, Tekinarslan, and Yavuzalp (2016) stated that the fact that the student keeps the camera and microphone off in the simultaneous lectures leads to the lack of eye contact between the lecturer and the student and that the student remains passive in the lectures for this reason (p.69). The lecturers stated that they generally follow the specified course

duration, but in some cases, the student's low or high participation in the lesson affects this duration. The lecturers stated that students' absenteeism from concurrent courses and low motivation during the pandemic process were the main factors that negatively affected the interaction. In addition, the feeling of loneliness brought about by physical distance also negatively affected the interaction. It can be said that absenteeism by students and low motivation and course performance of students have a negative impact on the motivation and satisfaction of F.M. (Gürer, Tekinarslan, & Yavuzalp, 2016 p.69). In this study, the biggest problem experienced in synchronous courses was related to internet connection, which is one of the instant problems. Rasheed (2007) confirms the result by stating that courses conducted in synchronous learning environments cause more technical problems than face-to-face environments. Internet speed and interruptions were seen as one of the biggest obstacles to the lessons.

During the pandemic, it would be beneficial for the support staff related to distance education, who took an active role by helping the lecturers with instant or e-mail etc. responses to all kinds of questions of the lecturers, to continue their work with the same continuity in a more motivated manner. Necessary measures should be taken to provide support for the production of e-content, and the continuity of the work carried out to provide financial support / material support to bring the missing / old / damaged technological equipment (laptop, tablet, etc.) of the teaching staff to a level that can keep up with the age should be ensured. It is important to further strengthen the existing internet infrastructure of the university, to make new arrangements for the implementation of the obligation to attend simultaneous courses in order to increase the participation of students in distance education courses, and to determine the satisfaction of faculty and students at regular intervals.

In this study, open-ended questions about F.M.' distance education experiences were prepared and data were collected in this way. In future studies, quantitative data collection tools for distance education experience can be developed. The research was conducted with lecturers working at a state university in the 2020-2021 academic year. Therefore, the research results are limited to the research population. In order to test the results with different populations and samples, the study can be repeated in different provinces, regions or across the country; especially in foundation universities, which are considered to have more material support, other universities and different school types.

The research was limited to the views of F.M.. Structuring a similar study to reflect the views of administrators and students would be valuable in the context of describing the urgent distance education process.

Conducting research to determine the missing, defective and negative opinions on measurement and evaluation, communication and interaction points in the distance education process can provide researchers with an area that needs to be emphasized in order to improve and develop these points.

5. REFERENCES

- Adnan, M., & Anwar, K. (2020). Online Learning amid the COVID-19 Pandemic: *Students' Perspectives. Online Submission, 2(1), 45-51.*
- Akkuş, İ., ve Acar, S. (2017). A Research on Determining the Effect of Technical Problems in Simultaneous Learning Environments on Teachers and Learners. *İnönü Üniversitesi Eğitim Fakültesi Dergisi, 18(3), 363-376.*
- Arora, A. K., & Srinivasan, R. (2020). Impact of pandemic COVID-19 on the teaching learning process: A study of higher education teachers. *Prabandhan: Indian journal of management, 13(4), 43-56.*
- Arora, S., Chaudhary, P., & Singh, R. K. (2021). Impact of coronavirus and online exam anxiety on self-efficacy: the moderating role of coping strategy. *Interactive Technology and Smart Education.*
- Ateş, V. and Güyer, T. (2016). Evaluation of a learning management system by F.M.: The case of Gazi University. *Journal of Information Technologies, 9(1), 1.*
- Bingöl, B. (2020). Opinions of landscape architecture students on the emergency distance education system in the COVID-19 process: The case of Burdur Mehmet Akif Ersoy University. *European Journal of Science and Technology, (20), 890-897.*
- Bozkurt, A. (2020). Coronavirus (Covid-19) pandemic process and evaluations on education in the post-pandemic world: New normal and new education paradigm. *Journal of Open Education Applications and Research, 6(3), 112-142.*
- Can, E., (2020). Coronavirus (Covid-19) pandemic and pedagogical reflections: Open and distance education practices in Türkiye. *Journal of Open Education Applications and Research, 6(2), 11-53.*
- Chang, G.C. & Yano, S. (2020). How are countries addressing the Covid-19 challenges in education? A snapshot of policy measures. <https://gemreportunesco.wordpress.com/2020/03/24/how-are-countries-addressing-the-covid-19-challenges-in-education-a-snapshot-of-policy-measures/> 13.07.2021
- Deshmukh, J. (2021). Speculations on the post-pandemic university campus a global inquiry. *Archnet-IJAR: International Journal of Architectural Research.*
- Dhawan, S. (2020). Online learning: A panacea in the time of COVID-19 crisis. *Journal of educational technology systems, 49(1), 5-22.*
- Durak, G., Çankaya, S., & İzmirli, S. (2020). Examining the distance education systems of universities in Türkiye during the COVID-19 pandemic

- period. Necatibey Education Faculty electronic journal of science and mathematics education, 14(1), 787-809.
- Feng, Z., Xu, D., & Zhao, H. (2007). Epidemiological models with non exponentially distributed disease stages and applications to disease control. *Bulletin of mathematical biology*, 69(5), 1511-1536.
- Giannini, S. & Lewis, G.S.(2020). Three ways to plan for equity during the coronavirus school closures. [http://www.iiep.unesco.org/en/three-ways-plan-equity-during coronavirus-school-closures-13365](http://www.iiep.unesco.org/en/three-ways-plan-equity-during-coronavirus-school-closures-13365) 07.07.2021
- Gürer, M. D., Tekinarslan, E., & Yavuzalp, N. (2016). The Opinions of Online F.M. about Distance Education. *Turkish Online Journal of Qualitative Inquiry*, 7(1).
- Hodges, C., Moore, S., Lockee, B., Trust, T., & Bond, A. (2020). The difference between emergency remote teaching and online learning. *Educause review*, 27, 1-12.
- Jasper, M. A. (1994). Issues in phenomenology for researchers of nursing. *Journal of advanced nursing*, 19(2), 309-314.
- Kır, Ş. (2020). The evolving roles of higher education institutions and F.M. in the digital transformation process. *Journal of Open Education Applications and Research*, 6(3), 143-163.
- Koloğlu, T.F. (2016). F.M.' perspectives and readiness for distance education: The case of Ordu University. Master's Thesis. Afyon Kocatepe University. Afyon.
- Kurnaz, E., & Serçemeli, M. (2020). A research on academicians' perspectives on distance education and distance accounting education during the Covid-19 pandemic period. *International social sciences academy journal*, (3), 262-288.
- Marshall, D. T., Shannon, D. M., & Love, S. M. (2020). How teachers experienced the COVID-19 transition to remote instruction. *Phi Delta Kappan*, 102(3), 46-50.
- Miles, M. B., & Huberman, A. M. (1994). *Qualitative data analysis: An expanded sourcebook*. sage.
- Morgan, D. L., & Morgan, R. K. (2008). *Single-case research methods for the behavioral and health sciences*. Sage publications.
- Onwuegbuzie, A. J., & Collins, K. M. (2007). A typology of mixed methodssampling designs in social science research. *Qualitative Report*, 12(2), 281-316.
- Pekcan, N., & Toraman, Ç. (2021). Investigation of Online Measurement and Evaluation Practices in Covid-19 Pandemic According to Teacher-

Student Opinions. *Erzincan University Journal of Faculty of Education*, 24(1), 120-129.

Rasheed, F. (2007). Factors impeding implementation of web-based distance learning. *AACE Review (formerly AACE Journal)*, 15(3), 315-338.

Sayan, H. (2020). Evaluation of Faculty Members' views on distance education during the Covid-19 pandemic process. *AJIT-e: Online Journal of Information Technologies*, 11(42), 100-122.

Şeren, N., Tut, E., & Kesten, A. (2020). Distance Education in the Corona Virus Process: Opinions of Basic Education Department F.M.. *Turkish Studies*, 15,6.

UNESCO. (2020). COVID-19 Educational disruption and response. <https://en.unesco.org/covid19/educationresponse#durationschoolclosures> 07.07.2021

Volery, T., & Lord, D. (2000). Critical success factors in online education. *International journal of educational management*.

Yavuz, M., Kayalı, B., Balat, Ş., & Karaman, S. (2020). Examination of emergency distance education practices of higher education institutions in Türkiye during the pandemic process. *Journal of National Education*, 49(1), 129-154.

Yıldırım, A., & Şimşek, H. (2003). *Qualitative Research Methods in Social Sciences (6th Edition)*. Ankara: Seçkin Publishing.

The Council of Higher Education. (2020). Koronavirüs (covid-19) bilgilendirme notu: 1.

https://www.yok.gov.tr/Sayfalar/Haberler/2020/coronavirus_bilgilendirm_e_1.aspx_15.10.2020

Chapter 3

Creativity in Gifted People

İsmail KILIÇ¹, Kemal Caner ÖNCÜL²

*¹Prof. Dr.; University of Trakya, institute of science, Mathematics and Science Education,
ismailk@trakya.edu.tr; ORCID: 0000-0002-3270-063X*

*²Graduate student; University of Trakya, institute of science, Mathematics and Science Education,
kcaneroncul@trakya.edu.tr; ORCID: 0009-0004-3741-9179*

1.INTRODUCTION

In today's contemporary world, the search for qualified people since the beginning of the 21st century has brought with it 21st century skills. The importance of entrepreneurship, finding solutions to complex problems, creativity and innovation skills is increasing day by day. These skills naturally required a more in-depth examination of the concept of intelligence, and the relationship between intelligence and superior talent and creativity began to be investigated. While creativity was a concept that was equated with extraordinary performance attributed only to geniuses in the past, today it is accepted that it exists to a greater or lesser extent in every individual. However, the environmental factor is also important for the development of innate creativity. Individuals who have acquired creativity skills are very valuable for countries to compete with other countries with the rapid change of art and technology, to find a place for themselves in the globalizing world, and to be pioneers in science and art. On the other hand, it is accepted that gifted individuals who can learn faster than their peers naturally have high creativity potential. This situation has made the meaning of the concept of gifted individuals from past to present and the identification process of gifted individuals even more important. The purpose of this research is to examine giftedness and creativity in gifted people.

1.1. Intelligence and Its Classification

Intelligence, an abstract concept, has become a living organism that has been focused on for years, arouses curiosity for researchers, and whose general outlines have been tried to be determined. We see the first emergence of the concept of intelligence in a terminological sense with Aristotle. The Latin word "intelligence" (inter-legentia) used in the scientific literature of intelligence is a literal translation of Aristotle's concept of "dia-noesis", and the first person to use it was Cicero (Akdeniz ve Alpan, 2022). From Cicero to the present day, studies on intelligence have accelerated, especially in the 19th century. In the historical process of the concept of intelligence, it was sometimes thought of as the score given by a measurement tool, sometimes as the adaptation of the individual to the environment, and sometimes as discovering the problem and producing solutions (Oğuzhan ve Arıbaşı, 2022).

The first scientifically based research explaining intelligence was conducted by Sir Francis Galton. Galton thought of individual differences as differences of senses (İnci, 2021). Thus, with the measurement tools he created, he stated that intelligence is more related to heredity (Iliman Güllühalı, İnci, Baltacı ve Melekoğlu, 2021).

In 1904, psychologist Alfred Binet and psychiatrist Theodore Simon were asked by the state to develop the Binet-Simon test to detect children who could not benefit from adequate education through the general curriculum. The first intelligence test, the Binet-Simon test, consists of 30 questions and aims to measure the individual's learning capacity (Damayanti ve Rachmawati, 2019). Terman developed the Stanford-Binet intelligence test by adapting the Binet-Simon test in 1916. He stated that gifted children could also be identified with this test and contributed to many studies in this field. In 1925, Terman defined intelligence as the ability to form concepts and determine the importance of concepts (Parıldar, 2021).

After efforts to make sense of intelligence with a single dimension, many studies have been conducted suggesting that it is a multidimensional and more complex structure. In particular, Thurstone (1930) suggested that intelligence is not a general factor but that there are seven factors that make up intelligence, including verbal ability, verbal fluency, numerical ability, understanding space relations, memory, perceptual speed and reasoning (Topaçlı, 2022). Guilford (1967) stated that intelligence consists of three components: "process", "content" and "product". Using these components, it explains intelligence with a cube prism model consisting of $4 \times 5 \times 6 = 120$ factors. Guilford suggested that each of these 120 factors are independent from each other, and only 50 of them are observable. He stated that an individual who may be advanced in some factors may be weak in some factors (Coşkun ve Gülleroğlu, 2021).

Gardner (1999) goes beyond traditional approaches and explains intelligence with the theory of multiple intelligences. Intelligence can be defined as the individual's capacity to produce a product that is valued in one or more cultures, the ability to produce effective solutions to problems encountered in real life, and the ability to discover complex problems that need to be solved (Arslan, 2020).

When the process of interpreting intelligence from past to present is examined, it is seen that there is a move from views that intelligence is one-dimensional and based only on heredity to views that it is multidimensional and shaped by the influence of the environment. In particular, Galton's view that intelligence is inherited and is only a general ability is now seen to be explained with a multi-factorial approach that includes special talent areas, creativity and production (İnci, 2021).

Studies have been carried out to classify intelligence scores by obtaining a numerical equivalent of intelligence using intelligence tests. In 1914, Stern proposed the idea that by calculating the ratio of mental age to calendar age, an intelligence quotient (IQ) could be calculated, indicating a child's relative

intelligence compared to peers of the same age (Anderson, 2001). Thus, according to Stern, it is found according to the result obtained from the connection intelligence quotient (IQ) = (mental age: calendar age) x 100 (Çitil ve Ataman, 2018). Intelligence quotients are represented by a curve called a bell curve that spreads from low to high. The 70%-130% range of this curve is considered normal intelligence (Atmaca ve Tan, 2021).

1.1.1. Subnormal intelligence (Intellectual Deficiency)

Wechsler tests are the main tests used in intelligence classification. Wechsler tests provide intelligence quotient (IQ) scores with a mean of 100 and a standard deviation of 15 (Süngü, 2022). The distribution of these intelligence levels according to Wechsler scores is as follows: Mild mental deficiency: 55-69 points, Moderate mental deficiency: 40-54 points, Severe mental deficiency: 25-39 points, Very severe mental deficiency: 0-24 points (Altun, Hakan ve Altun, 2021). An individual who has inadequacy in behavior or adaptation compared to his/her peers due to slowdown, pause or regression during the functioning of the mind is defined as retarded (Nar ve Cavkaytar, 2019).

1.1.2. Supernormal Intelligence (Giftedness)

Individuals who show superior performance or potential in their mental abilities compared to their peers, who have high-level creative features, and who have a high sense of duty in taking responsibility for the job they have started and overcoming it, are defined as gifted individuals (Kavruk ve Seyitoğlu, 2022).

When we look at the definitions of giftedness in the historical process, we see that there is a transformation from more traditional definitions to flexible and multiple approaches. According to traditional approaches, giftedness is the ability to perform above the criteria set in standardized intelligence tests. This criterion is generally defined as gifted students who score 130 points in IQ tests. According to IQ scores; 130 to 144 are defined as moderately gifted, 145 to 159 as gifted, and 160 to 179 as exceptionally gifted (Kahyaoğlu, 2013).

When we approach today, it can be said that we encounter definitions made from a broader perspective and going beyond numbers. In the Marland Report published in the United States in 1972, the definition of giftedness was expressed as high performance achieving extraordinary results. In addition, in this report, 6 areas of superior talent, defined in a versatile way as "general intellectual ability, high academic achievement, productive and creative thinking, leadership, skill in visual and performing arts, psychomotor skills", are

also mentioned. Children who demonstrate exceptional ability in at least one of these areas are defined as gifted (Kalfa ve Yalçınkaya Alkar, 2019).

Renzulli stated in 2005 that superior talent consists of three components. He identified these components as above-average ability, creativity and motivation. According to Renzulli, for an individual to be gifted, he must be superior to 85% of his peers in all of these components or 98% in at least one of them (Dönmez Devocioğlu, 2021). Renzulli expressed the creativity component that gifted people should have as being curious about more than one subject at the same time, being able to see different aspects of the subjects, and being able to present their ideas courageously by thinking original and out of the ordinary (Ünsal, Çetin ve Yoğurtçu, 2019).

When the literature is examined, it is seen that the definitions of giftedness have changed throughout history and that a clear definition cannot be made today. Especially today, when science and art are advancing rapidly, the skills and abilities required by the age are also changing, and this directly affects the definition of gifted (Demirkaya, Ünal ve Bozan, 2021).

While Sternberg and Zhang tried to explain giftedness with the Pentagon Theory, which has five components, Tannenbaum (1997) tried to explain giftedness with the Star Model. Gagne, on the other hand, clearly distinguished the concepts of intelligence and giftedness in 2004. Gagne thought that superior intelligence was innate and superior talent was acquired through experience. It refers to superior intelligence as an innate potential in at least one talent area. Creativity is one of these talent areas (Vatandaş, 2022).

2.CREATIVITY

Creativity, which is one of the most fundamental aspects that distinguish human beings from other living creatures, is a subject that has attracted attention and preserved its mystery in every period since the emergence of humanity (Yeşilyurt, 2020). Although creativity was initially within the scope of philosophy, it was only associated with art and literature until the 19th century (Kanlı, 2017). In today's 21st century, the importance of creativity has increased even more in the change of science and society (Yılmaz ve Güven, 2019). Creativity has now become a subject of research in every field, with the ability of people who make progress in science, art and technology to transform their imagination into creativity (Karabey ve Yürümezoğlu, 2015).

Arguing that creativity is specific only to geniuses, Wallas (1926) associated the dimensions of creativity with real behaviors with his four-stage model of creativity (preparation, incubation, enlightenment and verification) (Lee ve Lee, 2023). Ausubel (1964) stated that creativity is a quality that very few

individuals have and defined it as doing what others cannot do (İşler ve Bilgin, 2002).

Over time, scientists have accepted creativity as a unique natural tendency that affects every aspect of an individual's life and exists in every person (Yalçın ve Çiçekler, 2021). It is accepted that every child is born with creativity and that all individuals are creative to a greater or lesser extent (Yeşilyurt, 2020), however, creativity, which does not have a clear definition, has been tried to be explained with different dimensions in different periods of time (Girgin ve Akcanca, 2021).

As a result of his research, Guilford (1950), one of the pioneers of studies on creativity, tried to explain creativity with divergent and convergent thinking, and stated that an individual who can think divergently is creative. Guilford also states that it is necessary to strive for creativity, which is an innate and natural resource (Dinçer, Tabak ve Koçyiğit, 2019).

Torrance (1969), another pioneer of creativity-related studies, defined creativity as the capacity to recognize problems and difficulties, find solutions to these problems, produce new ideas against difficulties, and create new relationships by combining the ideas he finds (Polat, 2021).

Instead of traditional tests, which are not sufficient to measure intelligence comprehensively, researchers have turned to different approaches. One of these approaches is Guilford's Structure of Intellect (SOI) model. Guilford examined intelligence in three dimensions: mental operations (Memory, Cognition, Unconventional thinking, Conventional thinking, Evaluation), content (Formal, Symbolic, Semantic, Behavioral) and product (Units, Classes, Relationships, Systems, Transformations, Emanations). He explained this three-dimensional structure with cube theory. (İnci, 2021). The main advantage of Guilford's SOI Theory is that each dimension is divided into a total of 120 interrelated units, creating an open system that allows newly discovered categories to be added in any of three directions (Srivastava, 2019).

Torrance developed the "Torrance Creative Thinking Test" (TYDT), based on the 'SOI Battery' test developed by Guilford to measure creativity. TYDT, which has been updated many times, highlights the individual's strengths. In addition, its applicability to all age groups provides the opportunity to make comparisons between individuals identified as gifted and individuals who are not identified as gifted.

Many studies conducted using the Torrance Creative Thinking Test have revealed that gifted individuals have more creativity than their peers. There have been studies showing that the innate creativity of gifted individuals can increase depending on the education they receive and the environmental

conditions they live in. In his research, Ayvaz (2019) found that problem-posing-based activities positively differentiated the mathematical creativity of gifted students (Ayvaz, 2019). Kanlı (2017) conducted a study examining the relationship between scientific creativity and attitudes. The study concluded that gifted students' scientific creativity and scientific attitude have a significant and positive relationship and that scientific attitude predicts scientific creativity (Kanlı, 2017). Saluk (2017) conducted research on the effect of creative writing activities on improving the writing attitudes and writing skills of gifted students. It was observed that students used simple and ordinary words before the activities, and that they preferred original words after the activities, and that they developed an intriguing and imaginative style in the texts they created (Saluk, 2017). Research has shown that the enriched and differentiated education that gifted individuals receive positively affects both their general creativity and the sub-factors of creativity.

REFERANSLAR

- Akdeniz, H., & Alpan, G. (2022). Özel Yetenekli Öğrencilerde Duygusal Zekânın İncelenmesi. *Milli Eğitim Dergisi*, 51(235), 1901–1916. <https://doi.org/37669>
- Altun, S., Alkan, A., & Altun, H. (2021). Sınır zekâ ve zihinsel yetersizliği olan çocuklarda WISC-R profillerinin makine öğrenme algoritmaları ile incelenmesi. 27(5), 589–596. <https://doi.org/10.5505/pajes.2020.53077>
- Anderson, M. (2001). Annotation: conceptions of intelligence. *Journal of child psychology and psychiatry, and allied disciplines*, 42(3), 287–298. <http://www.ncbi.nlm.nih.gov/pubmed/11321198>
- Arslan, K. (2020). Eğitimde Yapay Zeka ve Uygulamaları. *Western Anatolia Journal of Educational Sciences*, 11(1), 71–80.
- Atmaca, F., & Tan, S. (2021). İki Kere Farklı: Özel Yetenekli ve Otizmlili Bireyler Hakkında Ne Biliyoruz? Bir Sistemik Alanyazın Taraması. *Dokuz Eylül Üniversitesi Buca Eğitim Fakültesi Dergisi*, 52, 133–152. <https://doi.org/10.53444/deubefd.873327>
- Ayvaz, Ü. (2019). Problem Kurma Temelli Etkinliklerle Özel Yetenekli Öğrencilerin Matematiksel Yaratıcılıklarının Geliştirilmesi Üzerine Bir Eylem Araştırması. (Yayımlanmamış Doktora Tezi). Bolu Abant İzzet Üniversitesi, Bolu.
- Çitil, M., & Ataman, A. (2018). İlköğretim Çağındaki Üstün Yetenekli Öğrencilerin Davranışsal Özelliklerinin Eğitim Ortamlarına Yansıması ve Ortaya Çıkabilecek Sorunlar. *Gazi Üniversitesi Gazi Eğitim Fakültesi Dergisi*, 38(1), 185–231.
- Coşkun, F., & Gülleroğlu, D. H. (2021). Yapay Zekanın Tarih İçindeki Gelişimi ve Eğitimde Kullanılması. *Ankara Üniversitesi Eğitim Bilimleri Fakültesi Dergisi*, 54(3), 947–966. <https://doi.org/10.30964/auebfd.916220>
- Damayanti, A. K., & Rachmawati, R. (2019). Kesipapan Anak Masuk Sekolah Dasar Ditinjau Dari Tingkat Inteligensi Dan Jenis Kelamin. *Psikovidya*, 23(1), 108–137. <https://doi.org/10.37303/psikovidya.v23i1.130>
- Demirkaya, H., Ünal, O., & Bozan, İ. (2021). Ebeveynlerinin Bakış Açısından Üstün Yetenekli Çocuklar. *Trakya Eğitim Dergisi*, 11(3), 1671–1687. <https://doi.org/10.24315/tred.970869>
- Dinçer, H., Tabak, A., & Koçyiğit, Y. (2019). Otantik Liderlik, Psikolojik Sermaye ve Yaratıcılık: Çok Düzeyli Analiz. *LAÜ Sosyal Bilimler Dergisi*, 10(2), 111–134. <https://dergipark.org.tr/en/pub/euljss/issue/52064/679389>
- Dönmez Devocioğlu, N. (2021). Özel Yetenekli Öğrencilere Kanun Çalgısını Öğretmeye Yönelik Sistemik Yaklaşımlar. *Uluslararası Anadolu*

Sosyal Bilimler Dergisi, 5(4), 1429–1458.
<https://doi.org/10.47525/ulasbid.974247>

- Girgin, D., & Akcanca, N. (2021). Eğitimde Yenilikçi Bir Öğrenme Yaklaşımı: İşbirlikli Yaratıcılık Modeli. *Trakya Üniversitesi Sosyal Bilimler Dergisi*, 23(1), 367–391. <https://doi.org/10.26468/trakyasobed.753592>
- Ilıman Güllühalı, E., İnci, G., Baltacı, R., & Melekoğlu, M. (2021). From Past to Present Gifted and Talented: The Evolution of Terminologies. *Fall 2021 Osmangazi Journal of Educational Research*, 8(2), 247–266.
- İnci, G. (2021). Galton'dan Günümüze Zekâ ve Zekâ Kuramları. *ODÜ Sosyal Bilimler Araştırmaları Dergisi*, 11(3), 1053–1068. <https://dergipark.org.tr/en/download/article-file/1976769>
- İşler, A. Ş., & Bilgin, A. (2002). Eğitim Fakültesi Sınıf Öğretmenliği Adaylarının Yaratıcılık Hakkındaki Düşünceleri. *Uludağ Üniversitesi Eğitim Fakültesi Dergisi*, 15(1).
- Kahyaoğlu, M. (2013). Ortaöğretim Öğrencilerinin Zekâ Alanları ile Çevreye Yönelik Tutumları Arasındaki İlişkinin Değerlendirilmesi. *Ankara Üniversitesi Eğitim Bilimleri Fakültesi Dergisi*, 46(2), 159–178.
- Kalfa, E., & Yalçınkaya Alkar, Ö. (2019). Üstün Yetenekli Çocuk ve Ergenlerde Mükemmeliyetçilik, Ruminasyon ve Depresyon İlişkisi: Derleme Çalışması. *Üstün Zekâlılar Eğitimi ve Yaratıcılık Dergisi*, 6(1), 1–13.
- Kanlı, E. (2017). Üstün yetenekli öğrencilerin bilimsel yaratıcılık düzeyleri, cinsiyet ve bilimsel tutumları arasındaki ilişkilerin incelenmesi. *İlköğretim Online*, 16(4), 1792–1802. <https://doi.org/10.17051/ilkonline.2017.342992>
- Karabey, B., & Yürümezoğlu, K. (2015). Yaratıcılık ve Üstün Yetenekliliğin Zeka Kuramları Açısından Değerlendirilmesi. *Buca Eğitim Fakültesi Dergisi*, 40, 86–107.
- Kavruk, S. Z., & Seyitoğlu, M. N. (2022). Okul Öncesi Dönemde Üstün Yetenekli Çocukların Özellikleri, Tanılanması ve Eğitimleri. *Uluslararası Erken Çocukluk Eğitimi Çalışmaları Dergisi*, 7(2), 25–37.
- Lee, J. H., & Lee, S. (2023). Relationships between physical environments and creativity: A scoping review. *Thinking Skills and Creativity*, 48, 101276. <https://doi.org/10.1016/J.TSC.2023.101276>
- Nar, S., & Cavkaytar, A. (2019). Orta ve Ağır Düzeyde Zihin Yetersizliği Olan Bireyler ve Eğitime Erişimleri. *Anadolu Journal of Educational Sciences International*, 9(2), 929–953. <https://doi.org/10.18039/ajesi.578185>
- Oğuzhan, Y. S., & Arıbaş, A. N. (2022). Kültürel Zeka Ve Örgütsel Zeka: Karşılaştırmalı Bir Çalışma. *Turistika Dergisi*, 2(1), 2022.

- Parıldar, E. (2021). *Üstün Yeteneklilerin Fen Bilimleri Öğretmenlerinin Üstün Yetenekli Çocuklar ve Eğitimlerine Yönelik Alguları*. (Yayımlanmamış Yüksek Lisans Tezi). Amasya Üniversitesi, Amasya.
- Polat, Ö. (2021). Effects of Mind Mapping Studies on the Creativity Skills of 60 to 72-month-old Children. *Ted Eğitim ve Bilim Dergisi*, 46(207), 21–42. <https://doi.org/10.15390/EB.2021.9582>
- Saluk, N. (2017). *Üstün Yeteneklilerde Yaratıcı Yazma Becerilerinin Geliştirilmesi Üzerine Bir Araştırma*. (Yayımlanmamış Yüksek Lisans Tezi). Kırıkkale Üniversitesi, Kırıkkale.
- Srivastava, S. (2019). Evolution Of Concept Of Intelligence. *TIJ's Research Journal of Social Science & Management*, 9. www.theinternationaljournal.org
- Süngü, B. (2022). Eğitilebilir Zihinsel Kısıtlılığı Olan Çocuklar İçin Uyarlanmış Eğitsel Oyun Uygulamaları ve Sosyal Beceri Gelişimi. İçinde *Eğitilebilir Zihinsel Kısıtlılığı Olan Çocuklar İçin Uyarlanmış Eğitsel Oyun Uygulamaları ve Sosyal Beceri Gelişimi* (Çamhıyer,H, s. 158). www.iksadyayinevi.com
- Topaçlı, H. (2022). *Kamu Personelinin Duygusal Zekâ Seviyelerinin Çalışan Performansı ve Görev Motivasyonu Düzeylerine Etkisi: Nevşehir Hacı Bektaş Veli Üniversitesi'nde Bir Araştırma*. (Yayımlanmamış Yüksek Lisans Tezi). Hacı Bektaş Veli Üniversitesi, Nevşehir.
- Vatandaş, B. (2022). Üstün yetenekli 8. sınıf öğrencilerinin ispat yapma süreçlerinin incelenmesi. *Aydın Adnan Menderes Üniversitesi Fen Bilimleri Enstitüsü Matematik ve Fen Bilimleri Eğitimi Anabilimdalı, Aydın*. <http://adudspace.adu.edu.tr:8080/xmlui/handle/11607/4699>
- Yalçın, M. M., & Çiçekler, C. Y. (2021). Öğretimde Yaratıcılık Ölçeği: Geçerlik-Güvenirlilik Çalışması. *International Journal of Society Research*, 18(Eğitim Bilimleri Özel Sayısı). <https://doi.org/10.26466/opus.954224>
- Yeşilyurt, E. (2020). Yaratıcılık ve Yaratıcı Düşünme: Tüm Boyut ve Paydaşlarıyla Kapsayıcı Bir Derleme Çalışması. *OPUS Uluslararası Toplum Araştırmaları Dergisi*, 15(25), 1–1. <https://doi.org/10.26466/opus.662721>
- Yılmaz, H., & Güven, Y. (2019). Yaratıcılık ve hoşgörü: Okul öncesi öğretmen adayları üzerine bir araştırma. *Erken Çocukluk Çalışmaları Dergisi*, 3(2), 258–277. <https://doi.org/10.24130/eccd-jecs.1967201932165>

Chapter 4

"Practical Implications of Mnemonic Keyword Method in L2 Vocabulary Learning and Teaching: A Comprehensive Meta-Analysis"¹

Sümeyye Eyşan Gizem AYDOĞDU², Buğra ZENGİN³

¹*This article is extracted from master dissertation entitled "The Effects of Mnemonics on L2 Vocabulary Learning", supervised by Assoc. Prof. Buğra ZENGİN, in Tekirdağ Namık Kemal University, 2023.*

²*Master's graduate. Tekirdağ Namık Kemal University, Institute of Social Sciences, Department of English Language and Literature, ORCID No: 0009-0001-6312-1948, eysan.gizem@gmail.com.*

³*Assoc. Prof., Tekirdağ Namık Kemal University, Faculty of Science and Literature, Department of English Language and Literature, bzengin@nku.edu.tr.*

ABSTRACT

This study delves into the impactful integration of mnemonic techniques in second language (L2) vocabulary acquisition and instructional methods, aiming to enhance L2 education practices. Investigating various instructional approaches, including the prominent Mnemonic Keyword Method (MKM), the research enriches L2 vocabulary education with insights bridging theory and practice. Through a meta-analysis of selected studies, the study uncovers the potential of MKM in second language teaching, emphasizing themes such as form-meaning fusion, iconicity-arbitrariness interplay, evidence-based practices, and individual differences. This research aims to not only contributing to L2 vocabulary instruction discourse but also emphasizing the need for more empirical research and practical guidance, empowering educators to effectively incorporate mnemonic techniques and transform language education, ultimately refining the learning experience for language learners.

Keywords: Mnemonics, Educational strategies, Language learning approaches, Second language acquisition

INTRODUCTION

This study aims to comprehensively examine the impact of mnemonics on second language (L2) vocabulary acquisition and instructional strategies. It specifically investigates the most effective types of mnemonics and their successful incorporation into classroom settings. The objective of this study is to contribute to the current corpus of knowledge pertaining to L2 vocabulary education and offer practical insights for instructors. Gaining a comprehensive understanding of individuals' perspectives on the utilization of mnemonic techniques in second language (L2) vocabulary training holds the potential to provide valuable insights into their effectiveness and contribute to the advancement of instructional approaches. This extensive review which is produced from the master's thesis "The Effects of Mnemonics on L2 Vocabulary Learning" (Aydoğdu, 2023) aims to make a substantial contribution to the examination of the historical significance of mnemonics, their current applications, and their transformative impact on second language (L2) vocabulary instruction and learning. It emphasizes the necessity for additional empirical research and practical guidance for educators.

The Mnemonic Keyword Method (MKM) has garnered attention as a promising tool for enhancing vocabulary acquisition, particularly among low-proficiency English language learners. This article summarizes a comprehensive meta-analysis of three selected studies to illuminate the practical implications of MKM in English language teaching. The success of MKM in enhancing vocabulary retention points to its potential to transform pedagogical strategies aimed at this specific learner group. This discourse contains underlying concepts that resonate as foundational elements upholding the effectiveness of MKM. The integration of form and meaning, the complex interaction between iconicity and arbitrariness, the strong support for practices grounded in facts, and the astute recognition of individual variations come together as fundamental principles. As the contents of this investigation are revealed, it becomes evident that the convergence of these concepts not only enhances the effectiveness of memory-based strategies but also acts as a guiding principle for educators to develop more sophisticated, efficient, and personalized teaching methods.

In the pursuit of enhancing our comprehension of the impact of mnemonics on second language (L2) vocabulary teaching, the findings of this study reverberate with a renewed plea for additional empirical investigation and practical recommendations. It is an entreaty to educators and researchers alike to unravel the intricate tapestry of mnemonics, laying the groundwork for a more enriched educational landscape.

1. Literature review

In the realm of second language acquisition (SLA), the role of vocabulary has garnered increasing attention due to its pivotal influence on language proficiency. The acquisition and utilization of a diverse lexicon are integral to effective communication, comprehension, and expression within a linguistic context. The centrality of vocabulary in SLA is underscored by researchers such as Nation (2001), Schmitt (1997), Krashen (1986), and Murcia & Larson-Freeman (1999). Nation's (2001) assertion that vocabulary forms the bedrock of effective communication and language proficiency resonates throughout literature. Schmitt (1997) further underscores vocabulary's significance by identifying it as the primary factor influencing L2 reading comprehension. Krashen (1986) and Murcia & Larson-Freeman (1999) emphasize the integral nature of vocabulary acquisition, substantiating its role in bolstering overall L2 proficiency. These collective insights unequivocally underscore vocabulary's indispensable role within the SLA framework.

A rich lexicon engenders a cascade of benefits across various language skills. Reading comprehension and writing proficiency are notably influenced by vocabulary size, as corroborated by Laufer and Nation's (1999) research. The predictive power of vocabulary surpasses that of cognitive strategies, affirming its primacy in understanding written content. Similarly, studies by Nattinger and DeCarrico (1992), as well as Paribakht and Wesche (1997), illuminate the positive correlation between vocabulary size and writing skills in an L2 context. Effective communication is further highlighted as Uchihara and Clenton (2018) establish a link between lexicon size and oral proficiency. This comprehensive impact on language skills substantiates the imperative nature of vocabulary acquisition.

While the emphasis on vocabulary is indisputable, it is crucial to acknowledge the coexisting significance of grammar in SLA. As underscored by Swain & Lapkin (2000), vocabulary skills are intrinsically linked to overall L2 proficiency, facilitating both communication and comprehension. However, grammar's structural framework, as expounded by Chomsky (1965), forms the scaffold for effective expression. The interdependence of vocabulary and grammar, as noted by Pearce (2006), necessitates a balanced approach that concurrently develops both linguistic components, thereby enhancing the holistic proficiency of L2 learners. This literature review has thus highlighted the pivotal role of vocabulary in second language learning, encompassing its influence on language skills and its interplay with grammar. While acknowledging the symbiotic relationship between vocabulary and grammar, it

is recommended that pedagogical approaches prioritize the simultaneous development of both components for optimal SLA outcomes.

Mnemonics have been employed as cognitive tools across many historical periods, serving the purpose of facilitating memory aids (Higbee, 1977) and retrieval. During the time of ancient civilizations such as Greece and Rome, where written materials were limited and record-keeping systems were not always dependable, mnemonic techniques were increasingly significant for the purpose of retaining important information, including historical events, speeches, and scientific knowledge. These procedures frequently aligned with repetition strategies in order to guarantee the long-term preservation of information.

Currently, mnemonics continue to exert a significant impact on the processes of learning and memory, notably within the realm of second language (L2) education. In this context, mnemonics have demonstrated a remarkable level of efficacy in facilitating the acquisition of vocabulary. Second language learners, who have the goal of effectively communicating in foreign language environments, require a significant amount of vocabulary acquisition. Mnemonics, which are strategies used to enhance memory, have a wide range of uses. These include connecting new words to known concepts or images, making associations with personal experiences, and utilizing repeating exercises and games. Previous studies conducted by Sagarra and Alba (2006) as well as Tavakoli and Gerami (2013) have showcased their efficacy in augmenting the acquisition and retention of second language (L2) vocabulary among students. These scholars attribute the success of these approaches to their ability to establish significant connections between newly introduced terms and pre-existing knowledge or personal experiences (Mahdi & Gubeily, 2018).

Notwithstanding the increasing interest in this subject matter, there remains a dearth of consensus regarding the optimal mnemonic forms and their suitable incorporation into instructional practices within educational settings. The current scholarly discussion regarding the integration of mnemonic techniques includes suggestions for the utilization of gamified strategies (Boutsika, 2014) as well as planned and methodical instructional methods (Carnine, 1994).

2. Method

2.1. Meta-analysis approach

How does the effectiveness of the Mnemonic Keyword Method (MKM) in improving vocabulary knowledge and retention among low-proficient English language learners compare to other instructional methods, and what factors may contribute to variations in the effect size across different studies?

To address the aforementioned research question comprehensively and robustly, a meta-analysis was employed. Meta-analysis offers a more potent approach than individual studies, as it aggregates data from multiple sources, increasing statistical power and providing a comprehensive overview of the topic. In this study, a meta-analysis was conducted to synthesize the outcomes of three previous studies that examined the effectiveness of the MKM compared to other instructional methods in enhancing vocabulary knowledge and retention among low-proficient English language learners.

2.2. Study design

The methodology employed in this study revolves around a meta-analysis approach, a powerful tool for synthesizing data from multiple studies to derive comprehensive conclusions. The selected method, a continuous random-effects model, facilitates the examination of the MKM's effectiveness by analyzing secondary data from three pivotal studies. These studies include "The Mnemonic Keyword Method: Effects on Vocabulary Acquisition and Retention" (Siriganjanavong, 2013), "The Effects of the Mnemonic Keyword Method on 8th Graders' L2 Vocabulary Learning" (Köksal and Çekiç, 2014), and "A Comparison between the Effectiveness of Mnemonic versus Non-mnemonic Strategies in a Foreign Language Learning Context" (Motlagh and Rashidi, 2015). Cohen's *d*, serving as the standardized mean difference (SMD) metric, emerges as a crucial tool for quantifying and comparing effect sizes across studies with varying measurement scales. Its application enables meaningful analysis, synthesis, and interpretation of results in the context of meta-analysis.

2.3. Study characteristics

Table 2.8. And Table 2.9 below, provide an overview of the characteristics of the three studies included in the meta-analysis. The studies varied in sample size, target language, and specific mnemonic techniques employed. Despite these differences, they collectively contribute to our understanding of the effects of mnemonics on L2 vocabulary learning.

Table 2.1: Characteristics of the studies part 1.

Label	Year	Grp A N	Grp A mean	Grp A SD	Grp B N	Grp B mean	Grp B SD
1	2013	37	4.540	3.458	37	1.000	3.290
2	2014	32	5.364	0.949	31	2.091	1.093
3	2015	20	8.700	4.850	20	5.100	5.100

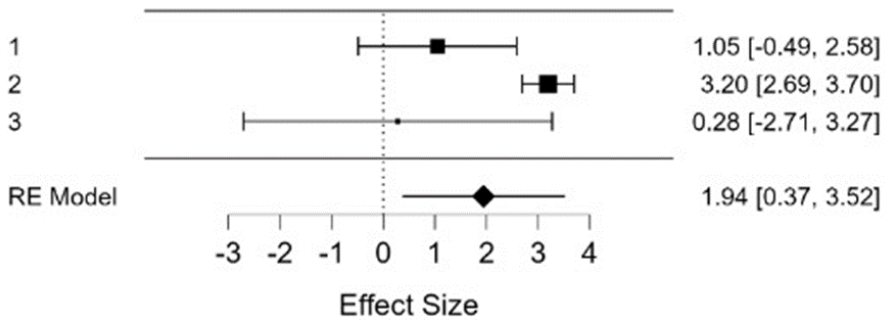
Table 2.2: Characteristics of the studies part 2.

Label	MD	SE	d (SMD)	SDp	Total N
1	3.540	0.7828	1.049	3.375	37
2	3.273	0.2571	3.196	1.024	63
3	1.400	1.5266	0.281	4.977	40

2.4. Findings

The findings derived from the meta-analysis revealed noteworthy insights. The results suggest that the Mnemonic Keyword Method (MKM) is associated with a substantial improvement in learning outcomes when contrasted with mixed methods or other control groups. This observation underscores the efficacy of the MKM as a superior strategy for enhancing vocabulary knowledge and retention among low-proficient English language learners. Furthermore, the meta-analysis not only sheds light on the overarching effectiveness of the MKM but also contributes to the understanding of the various factors that may influence variations in effect sizes across different studies. By synthesizing data from multiple studies, the meta-analysis provides a more comprehensive and accurate representation of the relationship between the MKM and vocabulary learning outcomes.

Figure 2.1: Forest Plot



The results extracted from the meta-analysis highlight a substantial effect size (SMD = 1.94, 95% CI [0.37, 3.52]), indicating the MKM's considerable impact on enhancing vocabulary retention among English language learners with limited proficiency. The use of Cohen's d as an effect size metric carries significant implications for the study's outcomes. Cohen's d offers several advantages, including standardized effect size representation, facilitating interpretability, effect size pooling for more robust conclusions, and its suitability for meta-regression and subgroup analyses. However, the presence of substantial heterogeneity across the studies suggests variations in the magnitude of the MKM's impact, potentially influenced by factors such as diverse implementation strategies and varying study designs. This nuanced insight necessitates further exploration into moderating variables and conditions that optimize the MKM's effectiveness.

2.5. Limitations

The studies encompass certain limitations despite offering significant insights into the efficacy of the Mnemonic Keyword Method (MKM). Notably, limited sample sizes in the studies might curtail the generalizability of outcomes, compounded by the focus solely on low-proficiency English language learners. The research solely gauges short-term effects on vocabulary acquisition and retention, necessitating future inquiries into MKM's longer-term impacts. Moreover, the studies fail to account for various variables influencing second-language acquisition, such as learner motivation, styles, and linguistic backgrounds, warranting a more comprehensive investigation. The absence of an examination of implementation challenges, potential disadvantages, and a comparison with other mnemonic techniques like the loci or peg-word methods also underscores an incomplete picture. Despite these limitations, the studies underscore MKM's potential for augmenting lexicon acquisition and

preservation, serving as a valuable tool for language learning enhancement, albeit necessitating further validation and broader contextual exploration. Additionally, Study 3's outcomes could be attenuated due to participants' non-Latin mother tongues, warranting cautious interpretation.

2.6. Conclusion and implications for education and future research

The methodology presented a thorough meta-analysis that underscores the effectiveness of the MKM in elevating vocabulary acquisition and retention among English language learners with limited proficiency. The use of Cohen's d as the SMD metric amplifies the precision and rigor of effect size analysis, ensuring standardized comparison and synthesis of results. The substantial effect size reinforces the MKM's practical relevance as a pedagogical strategy. Yet, the identified heterogeneity signifies the need for continued research into factors shaping the MKM's impact. These findings have significant implications for educators, highlighting evidence-based practices for enhancing vocabulary learning and contributing to the pedagogical toolkit in the realm of L2 education.

The findings of this meta-analysis hold profound implications for educational practices, particularly for educators working with English language learners who possess limited proficiency. The substantiated efficacy of the MKM underscores its potential as a pedagogical approach to enhance vocabulary acquisition and retention. Educators can leverage the MKM's mnemonic strategies to design effective instructional interventions that cater to diverse learner needs and proficiency levels.

Furthermore, the identified variations in effect sizes across studies necessitate further investigation. Future research endeavors could delve deeper into moderating variables that influence the MKM's effectiveness, including specific implementation techniques, variations in instructional contexts, and learner characteristics. Additionally, examining the nuanced interplay between the MKM and other instructional strategies could shed light on synergies and potential hybrid approaches that maximize vocabulary learning outcomes.

In conclusion, this meta-analysis serves as a pivotal contribution to the discourse on vocabulary acquisition and pedagogical strategies within L2 education. It empowers educators with evidence-based insights to refine instructional practices and tailor interventions to meet the unique needs of diverse learners. Moreover, it underscores the significance of continued research in the pursuit of optimizing vocabulary learning methodologies and enhancing educational outcomes for English language learners.

3. Discussion and mnemonic examples

Zengin (2022) explores the potential for associative patterns between students' native languages and the target language they aim to learn, in terms of visual degrees of connotation and pattern complexity. The study suggests the possibility of generalization in the degrees of pattern formation or a significant transformation of visual elements into patterns, bridging the gap between the sound-meaning correspondence. Particularly, the imitation of natural sounds is found to exhibit higher levels of visual representation. Despite surface disparities, a focus on details reveals that language not only introduces randomness but also, to varying degrees, empowers both visual patterns and randomness to impart forms with meanings, underscoring the liberating role of human agency.

Due to the overlaps between form and meaning, success is achieved when the form reflects the meaning, and the property of iconicity demonstrates that this feature is not limited solely to onomatopoeic words. It is crucial not to perceive arbitrariness and iconicity as two separate extremes (Dingemanse et al., 2015). Even in cases of arbitrariness, the presence of iconic features partially exists, necessitating an open-minded perception to recognize this potential. By activating this potential, a deeper level of understanding is attained at the semantic level in memory processing while learning English vocabulary, thus enhancing the language acquisition process.

Thus, the successful effect sizes of the selected works on the mnemonic keyword topic form the basis for providing the following recommendations in English teaching and learning:

- *Integration of Meaning and Form*

Central to the efficacy of MKM is its capacity to bridge the gap between word forms and their meanings, thereby enhancing vocabulary retention. The mnemonic associations between keywords and target words facilitate meaningful connections, allowing learners to grasp the semantic nuances of English vocabulary. The positive results observed in the studies emphasize the importance of integrating meaning and form in vocabulary instruction. The mnemonic keyword method, which involves associating new words with familiar keywords, demonstrates that when learners can establish connections between the form and meaning of words, their retention and understanding improve. English language educators can leverage this insight by designing activities that encourage learners to explore the relationships between word forms and their meanings, fostering a deeper understanding of vocabulary. Educators can capitalize on this principle by designing instructional activities

that encourage learners to explore and internalize the interplay between form and meaning, fostering a deeper comprehension of vocabulary.

- *Bridging the Gap Between Iconicity and Arbitrariness*

The concept of iconicity, within the realm of linguistics, encompasses the complex interaction between formal language components and their corresponding semantic representations (Waugh, 1994). The correlation between linguistic units and the concepts they represent is apparent in cases where the phonological, visual, or structural characteristics of these units share similarities, which in turn promote memory associations and enhance cognitive recall. Within the domain of acquiring vocabulary in a second language (L2), the ability to recognize the alignment between the phonological or orthographic structure of a word and its meaning greatly facilitates the mental assimilation of new vocabulary. This idea is evident in the phenomena of sound symbolism and graphical resemblance, which imbue lexical items with mnemonic qualities that are especially beneficial for second language learners. Nevertheless, the effectiveness of iconicity is constrained due to the complex phenomenon of polysemy- when a single term incorporates multiple meanings (Waugh, 1994). The presence of multiple meanings can obscure the clear association of an iconic symbol, thereby reducing its capacity to be universally applicable across the various meanings of a term. Furthermore, the extent to which iconic congruence is universally applicable is limited by quirks inherent to language and cultural nuances that influence lexical semantics. Therefore, the use of iconicity plays a crucial role in enhancing second language learners' ability to acquire vocabulary. However, its effectiveness relies on the simultaneous understanding of the complex set of linguistic rules that are fundamental to achieving a thorough grasp of vocabulary.

The success of MKM challenges the conventional dichotomy between iconicity and arbitrariness in language. While iconicity might be limited in natural language, MKM demonstrates that mnemonic associations can effectively facilitate the acquisition of seemingly arbitrary words. This insight encourages educators to craft mnemonic strategies that transcend linguistic conventions, aiding learners in memorizing and understanding diverse vocabulary items. The meta-analysis findings suggest that the effectiveness of mnemonic techniques is not solely limited to words with direct or iconic connections between their forms and meanings. While language inherently involves arbitrariness, the mnemonic keyword method's success underscores the value of creating mnemonic associations to bridge this gap. Educators can utilize this principle to design mnemonic strategies that aid learners in

remembering and internalizing the meanings of seemingly arbitrary English words, promoting more effective language acquisition.

- *Utilizing Enhanced Teaching Practices*

English language teachers can draw inspiration from the mnemonic keyword method's success to enhance their teaching practices. Incorporating mnemonic techniques into vocabulary instruction can provide a practical and engaging approach for facilitating vocabulary retention. By guiding learners in creating memorable associations between keywords and target words, educators can contribute to a more enjoyable and effective learning experience for their students.

- *Evidence-Based Practices*

The empirical evidence presented through the meta-analysis underscores the importance of evidence-based practices in English language teaching. Educators are encouraged to embrace MKM as a pedagogical approach grounded in research findings. By incorporating mnemonic techniques into their teaching repertoire, educators can proactively address the vocabulary acquisition needs of low-proficiency learners. This integration of evidence-based practices ensures pedagogical efficacy and learner-centered instruction. The meta-analysis provides empirical evidence supporting the efficacy of the mnemonic keyword method. English language educators are encouraged to embrace evidence-based practices that are grounded in research findings. By integrating mnemonic strategies into their teaching methodologies, educators can confidently address the vocabulary acquisition needs of low-proficiency English language learners, leading to improved learning outcomes.

- *Differentiated Instruction*

The variability in effect sizes across studies emphasizes the necessity of differentiated instruction. Recognizing individual learner differences, such as learning styles, backgrounds, and contextual factors, is pivotal in tailoring mnemonic-based instruction to diverse student profiles. Educators should adopt a flexible approach that accommodates these differences, enhancing the accessibility and success of MKM implementation. The observed variability in effect sizes across studies highlights the importance of considering individual learner differences and implementation factors. Educators should recognize that while the mnemonic keyword method holds promise for enhancing vocabulary retention, its effectiveness may vary based on factors such as learners' backgrounds, learning styles, and contextual factors. Therefore, adopting a differentiated approach to

instruction that considers these variables can lead to more tailored and successful implementation of mnemonic techniques.

3.6. Mnemonic examples

This collection of mnemonic illustrations examines the effectiveness and creativity of utilizing Turkish mnemonic devices, as suggested by Zengin (2006) and Aydoğdu (2023), in order to improve the learning of English as a Foreign Language (EFL) and other L2 vocabulary. The following examples aim to elucidate the possible advantages of employing culturally relevant and contextually unique mnemonic strategies. Through using the innate familiarity and cognitive connections associated with an individual's home language, these mnemonic techniques enable learners to proficiently encode, retain, and recall material in the English language. As mentioned before, the efficacy of the Mnemonic Keyword Method (MKM) poses a challenge to the traditional binary distinction between iconicity and arbitrariness in language. Although natural language may have limitations in terms of iconicity, MKM research shows that mnemonic connections can be a useful tool in aiding the learning of words that may appear arbitrary. This article explores the potential benefits of incorporating Turkish mnemonic examples into the vocabulary acquisition process for English as a Foreign Language (EFL) and other L2 (including Korean and Japanese) students . By examining the impact of such integration on cognitive processes, it aims to shed light on how this approach can enhance the efficiency and effectiveness of vocabulary learning.

Table 3.1: English-Turkish Mnemonic Examples

English word	Pronunciation	Turkish meaning	Mnemonic example
Accelerate	/ek'sel.ə.eɪt/	Hızlandırmak	Acele et.
Accident	/'æk.sə.dənt/	Kaza	Hay aksi! (Kaza olunca denir)
Accomplish	/ə'kɑ:m.plɪʃ/	Başarmak	Komple bitiş (Başarılı olunca “komple-bitiş”).
Agile	/'ædʒ.əl/	Çevik	Acil. (Çevik (agile) olup acil(agile okunuşu form benzerliği) yardıma koşmak).
Bad	/bæd/	Kötü	Beter olmak (Bad-er/Beter/Kötü olmak).
Basic	/'beɪ.sɪk/	Temel	Temel konular “basit”tir (Basit/Basic form benzerliği).
Bill	/bɪl/	Hesap	Hesabımı bil (bill).
Butter	/'bʌt.ə/	Tereyağı	Bıçağı tereyağına batır (butter).
Cash	/kæʃ/	Para	Elim kaşındı

			(kaşınmak/"cash"ınmak form benzerliği) kesin para gelecek.
Child	/tʃaɪld/	Çocuk	Çocuğun çaydan ("child"dan) ağzı yandı.
Color	/'kʌl.ə/	Renk	Renklerin izi "kalır".
Eventually	/ɪ'ven.tʃu.ə.li/	Sonunda	Sonunda "ev"e vardık.
Fall	/fɑ:l/	Düşmek	A "fall"ayıp yere düştü
Gorgeous	/'gɔ:r.dʒəs/	Güzel	Güzel kıza "görücü" geldi. (Gorgeous-görücü form benzerliği)
Hair	/her/	Kıl, Saç	Kıl adam "hayır(hair)" diyip duruyordu.
Host	/houst/	Ev sahibi	Ev sahibi köpeği "hoşt" diye kovaladı.
Impediment	/ɪm'ped.ə.mənt/	Engel	Ped (im-ped-iment) sıvıyı engelledi.
Improve	/ɪm'pru:v/	Gelişmek	Provalar (im-prove) gelişmek içindir.
Shirt	/ʃɜ:t/	Gömlek	Üstünü gömlekle örttü (shirt-ört benzerliği).
Tip	/tɪp/	Bahşiş	Bahşiş vermeyene tip tip bakan garsonlar.
Wise	/waɪz/	Bilge	Bilge adam vaaz (wise okunuş benzerliği) veriyordu.

Table 3.2: Korean-English-Turkish Mnemonic Examples

Korean word	Pronunciation	Meaning	Mnemonic example
꽃	/kkot/	(TR) Çiçek, (EN) Flower	Çiçek kokusu (kkot-kusu)
해	/hae/	(TR) Güneş, (EN) Sun	Güneşli hava (hae-va)
차	/cha/	(TR) Çay, Araba (EN) Tea, Car	Arabada çay içmek (includes two polysemic meanings of "cha")
물	/mul/	(TR) Su, (EN) Water	Musluk (mul-sluk) suyu
수요일, 수	/suyoil/ /su/	(TR) Çarşamba, (EN) Wednesday	Çarşamba'yı sel (su) aldı. (Sel kelimesinden Korece /su/ (Çarşamba) düşünülmesi önerilir.)
닭	/dalg/	(TR) Tavuk, (EN) Chicken	Chicken is tacking (dalg-ing) a poster. (The act of tacking also sounds like "tack-tack!" which resembles the pronunciation of the Korean word chicken (dalg).) *See Figure 1.

Figure 3.1: Chicken Tacking a Poster



Reference: Aydoğdu (2023).

Table 3.3: Japanese-Turkish Mnemonic Examples

Japanese word	Pronunciation	Meaning	Mnemonic example
本	/hon/	(TR) Kitap, (EN) Book	Kitap okumak hobimdir (hon-bi)
火	/hi/	(TR) Ateş, (EN) Fire	Think of fire as a source of heat (hi-eat).
夢	/yume/	(TR) Rüya, (EN) Dream	Link dreaming (yume) with the sleeping (uyumak). “u-yume-ak”
大きい	/ooki/	(TR) Big, (EN) Büyük	Connect the vastness of ocean (okyanus/ooki-yanus) with being big (ooki).
夜	/yoru/	(TR) Gece, (EN) Night	Geceleri uyu-“yoru”-m.
時計	/tokei/	(TR) Saat, (EN) Clock	Picture a clock’s (tokei) bell ringing like a “tokat”.

CONCLUSION

The comprehensive meta-analysis of MKM's efficacy in enhancing vocabulary acquisition among low-proficiency English language learners yields practical implications for English language teaching. The integration of meaning and form, the synergy between iconicity and arbitrariness, evidence-based practices, and differentiated instruction emerge as key considerations. By embracing these insights, educators can enrich their instructional practices, fostering an enhanced learning experience and improved vocabulary acquisition outcomes for learners. This meta-analysis underscores the significance of MKM as a pedagogical tool with transformative potential in the realm of English

language education. The mnemonic keyword technique capitalizes on the cognitive connections between memorable images and abstract words, tapping into the brain's natural inclination for associative thinking. English language educators can leverage this insight by incorporating visual aids and creative cues into their teaching methodologies, thus enhancing engagement and retention among learners.

In conclusion, the success of the mnemonic keyword method demonstrated through the effect sizes of the selected studies underscores its potential as an effective tool for enhancing vocabulary retention among low-proficiency English language learners. The implications drawn from these findings provide valuable insights for English language educators to refine their instructional approaches, emphasizing the integration of form and meaning, the utilization of mnemonic techniques, and the adoption of evidence-based practices to optimize vocabulary learning experiences.

In brief, the comprehensive meta-analysis carried out on the effectiveness of the Mnemonic Keyword Method (MKM) in enhancing vocabulary acquisition among English language learners with limited proficiency not only confirms its importance but also provides insights into the wider field of English language instruction. The integration of various studies highlights numerous important factors that require attention and incorporation into teaching practices.

The principle of integrating meaning and form is identified as a fundamental concept resulting from this meta-analysis. The analyzed research consistently demonstrate that incorporating both the contextual meaning and grammatical structures of words into vocabulary education enhances learners' ability to comprehend and internalize new concepts. This highlights the necessity of adopting a comprehensive methodology that cultivates a more profound comprehension of vocabulary within the wider linguistic context.

Moreover, the examination of the interplay between iconicity and arbitrariness in the research introduces an intriguing aspect to the realm of efficient language pedagogy. The mnemonic keyword technique leverages the cognitive associations between memorable visual representations and abstract linguistic concepts, exploiting the brain's inherent propensity for associative cognition. L2 educators have the opportunity to utilize this valuable understanding by integrating visual aids and creative prompts into their instructional approaches. This can effectively enhance learner engagement and improve information retention.

The meta-analysis also underscores the importance of evidence-based practices. By synthesizing a range of studies, it becomes evident that strategies rooted in research consistently outperform ad-hoc or tradition-based

approaches. This accentuates the need for educators to stay abreast of the latest pedagogical research and tailor their strategies accordingly, ensuring that their methods are not only engaging but also backed by empirical evidence.

Moreover, the implementation of differentiated education becomes a crucial factor in effectively addressing the varying requirements of students. The efficacy of the MKM can be enhanced by acknowledging the presence of distinct learning styles, speeds, and strengths among individual students. Tailoring mnemonic associations to align with the individual student's personal interests and background has the potential to deliver even more noteworthy outcomes.

In summary, the meta-analysis highlights the significant impact of the Mnemonic Keyword Method in the field of English language teaching. The assessed studies provide significant effect sizes, providing strong evidence for the potential of vocabulary learning enhancement among low-proficiency learners. The findings of this study have significant significance for English language educators, providing them with a valuable framework for enhancing their teaching approaches. Educators can enhance vocabulary learning experiences by integrating both meaning and form, utilizing mnemonic techniques, implementing evidence-based instructional tactics, and customizing ways to cater to individual requirements. The findings of this meta-analysis provide more support for the idea that the Mnemonic Keyword Method is not only a successful strategy, but also a means to enhance teaching practices in a more creative and influential manner.

REFERENCES

- Aydoğdu, S.E.G. (2023). *The Effects of Mnemonics on L2 Vocabulary Learning*. Yayınlanmamış Yüksek Lisans Tezi. Tekirdağ: Namık Kemal Üniversitesi.
- Boutsika, E. (2014). *Kinect in education: A proposal for children with autism*. *Procedia Computer Science*, 27, 123-129.
- Carnine, D. (1994). *Introduction to the mini-series: Educational tools for diverse learners*. *School Psychology Review*, 32, 341-350.
- Celce-Murcia, M., & Larsen-Freeman, D. (1999). *The Grammar Book: An ESL/EFL Teacher's Course (2nd ed.)*. Boston, MA: Heinle and Heinle.
- Chomsky, N. (1965). *Aspects of the Theory of Syntax (50th ed.)*. The MIT Press.
- Higbee, K. L. (1977). *Your memory: How it works and how to improve it*. Prentice-Hall.
- Huckin, T., & Bloch, J. (2002). *Strategies for inferring word meanings in context: A cognitive model*. In T. Huckin, M. Haynes and J. Coady (Eds.), *Second Language Reading and Vocabulary Learning* (pp. 153-178). Norwood: Ablex Publishing Corporation.
- Köksal, O., & Çekiç, A. (2014). *The Effects of the Mnemonic Keyword Method on 8th Graders' L2 Vocabulary Learning*. *Educational Alternatives*, 12, 1030-1047.
- Krashen, S. D. (1982). *Principles and practice in second language acquisition*. Oxford: Pergamon Press.
- Krashen, S.D. (1986). *The Input Hypothesis: Issues and Implications*.
- Larsen-Freeman, D. (2000). *Techniques and principles in language teaching (2nd ed.)*. Oxford: Oxford University Press.
- Laufer, B. (2003). *Vocabulary acquisition in a second language: Do learners really acquire most vocabulary by reading? Some empirical evidence*. *The Canadian Modern Language Review*, 59(4), 567-587.
- Mahdi H. S., & Gubeily M. A. (2018). *The Effect of Using Bizarre Images as Mnemonics to Enhance Vocabulary Learning*. *Journal of Social Studies*, Volume 24, Issue (1), March, 2018.
- Motlagh, F. A., & Rashidi, N. (2015). *A Comparison between the Effectiveness of Mnemonic versus Non-mnemonic Strategies in Foreign Language Learning Context*. *International Journal of Language & Applied Linguistics IJLAL*, 19-26.
- Nagy, W. E., & Anderson, R. C. (1984). *How Many Words Are There in Printed School English?* *Reading Research Quarterly*, 19(3), 304-330.
- Nation, I. (2001). *Learning Vocabulary in Another Language (Cambridge Applied Linguistics)*. Cambridge: Cambridge University Press.

- Nation, I. S. P. (2006). *How large a vocabulary is needed for reading and listening?* Canadian Modern Language Review, 63(1), 59–82.
- Nation, I., & Beglar, D. (2007). *A Vocabulary Size Test*. The Language Teacher, 31, 9-13.
- Nation, I.S.P. (1990) *Teaching and Learning Vocabulary*. Newbury House, New York.
- Nation, I.S.P. (2001). *Learning vocabulary in another language*. Cambridge: Cambridge University Press.
- Nattinger, J. R., & DeCarrico, J. S. (1992). *Lexical phrases and language teaching*. Oxford University Press.
- Paribakht T. S., Wesche M. (1997). *Vocabulary enhancement activities and reading for meaning in second language vocabulary acquisition*. Second Language Vocabulary Acquisition: A Rationale for Pedagogy, 55(4), 174–200.
- Paribakht T. S., Wesche M. (1999). *Reading and “incidental” L2 vocabulary acquisition*. Studies in Second Language Acquisition, 21(2), 195–224.
- Pearce, M. (2006). *The Routledge Dictionary of English Language Studies (1st ed.)*. Routledge.
- Sagarra, N., & Alba, M. (2006). *The key is in the keyword: L2 vocabulary learning methods with beginning learners of Spanish*. The Modern Language Journal, 90(2), 228–243.
- Schmitt, N. (1997). *Vocabulary Learning Strategies*. In D. N. Schmitt, & M. McCarthy (Eds.), *Vocabulary: Description, Acquisition and Pedagogy* (pp. 199-227). Cambridge: Cambridge University Press.
- Siriganjanavong, V. (2013). *The Mnemonic Keyword Method: Effects on the Vocabulary Acquisition and Retention*. English Language Teaching, 6(10), 1-10.
- Swain, M. & Lapkin, S. (2000). *Task-based second language learning: the uses of the first language*. Language Teaching Research, 4, 3, 251–74.
- Tavakoli, M. & Gerami, E. (2013). *The effect of keyword and pictorial methods on EFL learners' vocabulary learning and retention*. Porta Linguarum, 19, 299-316.
- Uchihara, T., & Clenton, J. (2018). *Investigating the role of vocabulary size in second language speaking ability*. Language Teaching Research, 24(4), 540–556.
- Waugh, Linda R. (1994). *Degrees of iconicity in the lexicon*. Journal of Pragmatics 22 (1994) 55-70

- Wesche, M., & Paribakht, T. S. (1996). *Assessing Second Language Vocabulary Knowledge: Depth vs. Breadth*. Canadian Modern Language Review, 53, 13-39.
- Zengin, B. (2006). *Türk öğrencilerin İngilizce kelimeleri öğrenmelerinde anlamsal-anahtar sözcük yöntemi*. Yayınlanmamış Doktora Tezi. Erzurum: Atatürk Üniversitesi.
- Zengin, B. (2022). *İngilizce için Anahtar Sözcük-Anlamsal İşlem Yöntemi ve Formanlam Çağrışımlarında Görüntüsellik ve İlişkisel Çerçeve Kuramı: Türkiye Bağlamı*. Eğitim Bilimleri Alanında Uluslararası Araştırmalar XIV, Sayfa 61-83, Eğitim Yayınları Eylül-Ekim, 2022.

Chapter 5

Opinions of Administrators, Classroom and Guidance Teachers Regarding Training Programs in Primary Schools (İYEP)¹

Gamze ETEM², Seda KERİMGİL ÇELİK³

¹*This study was produced from the master's thesis conducted by the first author under the supervision of the second author.*

²*Teacher- Graduate student , Ministry of National Education,-Firat University. gamzeetemm@gmail.com
ORCID No: 0000-0002-9093-6392*

³*Dr., Firat University, Faculty of Education, Department of Basic Education. skeringil@firat.edu.tr ORCID
No: 0000-0001-9152-4093*

INTRODUCTION

School is one of the most crucial periods in human life and of all school phases, primary school is the most memorable. During primary school, students are introduced to fundamental knowledge and skills such as arithmetic, initial reading and writing, and language skills based on their interests and aptitudes. In addition to conveying these basics, students are also taught to utilize what they have learned, analyze, think critically, and become good citizens, preparing them for the next level of education. In achieving these aims, curricula, teachers, students, materials, and methods play significant roles (Güneş, 2021). One expectation of evolving societies is to cultivate qualified individuals. Therefore, identifying and addressing the causes of failures within the education system is crucial (Çimşir, 2021). According to the Ministry of National Education (MEB, 2019), the primary school remedial program continues at the 3rd-grade level, providing psychosocial support specifically for the subjects of Turkish and Math. The MEB (2018) states that the Primary School Remedial Program (İYEP) targeted 3rd and 4th graders who struggled with objectives from their previous year's Turkish and Math curriculum, offering a supportive measure that filled their academic gaps and provided psychosocial assistance. The remedial program in primary schools is a supportive program built upon the philosophy of the current curriculum, focusing on student-centered understanding, fundamental skills, and teaching-learning approaches. The program has identified three modules in Turkish learning areas: listening/watching, speaking, reading, and writing.

In educational settings, it is essential to foster a love of reading in students and provide experiences related to reading to enhance their native language proficiency (Güleryüz, 2004). The education system requires not just literacy but also critical thinking and strategic reading (Karatay, 2010). According to Ergen and Batmaz (2019), using reading comprehension strategies positively impacts reading comprehension achievement. In addition, Kızıgın and Baştuğ (2020) state that reading motivations are positively correlated with reading comprehension, affecting children's academic success in Turkish. Another subject covered in İYEP, along with Turkish, is mathematics. According to the TIMSS 2019 results, based on age criteria, Türkiye ranked 23rd out of 58 participating countries regarding 4th-grade math achievement (Suna et al., 2020). Studies in Türkiye reveal primary school students' struggles with mathematical representations (Özçakır Sümen, 2021), a noteworthy relationship between anxiety and math achievement (Türk and Bedir, 2021), and heightened math anxiety among students with lower academic results (Yenilmez and Özbey, 2006).

International research shows that inequalities have various reasons both within and outside schools, reaching back to the beginning of primary education. Due to socioeconomic and cultural reasons, a gap emerges among students from the start of basic education. MoNE implements various projects from preschool onwards to minimize this disparity, one of which is the Primary School Remedial Program (Özer et al. 2020). When examining the specific aims of the primary school remedial program, they include fundamental listening and speaking skill development, reading comprehension, mathematical literacy skills, mathematical concepts, problem-solving process, attitudes towards math, a confident approach, and psychosocial support to fill the gaps in Turkish and math learning areas (MoNE, 2019). Research regarding İYEP has predominantly focused on the perspectives of teachers (Açıl et al., 2021; Anılan and Özgan, 2020; Arı and Çalışoğlu, 2022; Aydın and Yakar, 2020; Aydın Gürlü, 2020; Balantekin, 2020; Bulu and Avcı, 2022; Cesur and Yetkiner, 2020; Dilekçi, 2019; Güder et al., 2023; Güney and Yaman, 2022; Hökelekli and Çelik, 2021; Kaçar and Uz, 2019; Kırmık et al., 2019; Kozikoğlu and Tosun, 2020; Özdoğru, 2022; Polatlı and Büyükşahin, 2022; Tarhan and Bayar, 2023; Toptaş and Karaca, 2019; Yıldız and Kılıç, 2020), students (Kale and Demir 2021), administrators (Özdemir, 2022), both administrators and teachers (İğli and Ulutaş, 2020), and a combination of teachers, administrators, students, and parents (Gürol and Gül, 2021).

The current research aims to explore the opinions of classroom teachers, administrators, and guidance counselors involved in the İYEP process regarding primary school remedial programs. To this end, these professionals were asked about the process and content of the remedial program in primary schools and the program's strengths and weaknesses. Furthermore, classroom teachers were surveyed about the differences the program created in students, who should run the program, and their opinions regarding evaluation tools.

METHODOLOGY

This study examines the views of primary school teachers, administrators, and guidance counselors, who are the implementers of İYEP, using the case study design from qualitative research methods. The holistic single case design has been used from the case study designs. The case study, the stages determined as forming sub-problems, determining the analysis unit, revealing the situation, determining the participants in the research, relating the data with sub-problems, data analysis, and writing the research (Yıldırım & Şimşek, 2018) have been followed. The current research has been shaped according to these stages. The ethical permission for the research was obtained from Firat

University Social and Humanities Research Ethics Committee on 29.07.2020 with decision number 9 of the meeting 15. The necessary permissions have been obtained from the Ministry of Education for the implementation of the research.

Participants of the Study

In the study, the convenience sampling method was used among purposeful sampling methods. Purposeful sampling is a method that allows for the discovery of important situations for research and facilitates in-depth investigation. Purposeful sampling aims to reach rich situations. Various strategies can be applied for this purpose. Convenience sampling refers to the selection of units that are easily accessible and convenient due to various limitations (Patton, 2018). The study group of the research consists of 37 primary school teachers, 13 school administrators, and 5 guidance counselors working in a province in Türkiye. The characteristics of the study group of the research are given in Table 1.

Table 1. Characteristics of Study Participants

Classroom teachers	Gender	Female	13
		Male	24
	Seniority	1-5 years	12
		6-10 years	17
		11-15 years	6
	Educational Status	16 years and above	2
		Bachelor's Degree	35
Master's Degree	2		
Administrators	Gender	Female	2
		Male	11
	Seniority	1-5 years	2
		6-10 years	2
		11-15 years	4
	Educational Status	16 years and above	5
		Bachelor's Degree	12
Master's Degree	1		
Guidance teachers	Gender	Female	3
		Male	2
	Seniority	1-5 years	3
		6-10 years	2
		Educational Status	Bachelor's Degree

Data Collection Tool

In the study, semi-structured interviews were employed to gather data. These interviews allow for a comprehensive discussion, enabling interviewees to

freely express themselves (Büyüköztürk et al., 2011). The foundation for the interview questions was laid by reviewing relevant literature. This preliminary set of questions was then scrutinized by four domain experts to reach its final form. All participants provided their voluntary consent before the interviews. Each session was audio-recorded and conducted remotely. The participants included teachers, administrators, and guidance counselors who were involved with the Primary School Training Program during the 2018-2019 and 2019-2020 academic years. On average, the interviews spanned between 8 to 15 minutes.

Data Analysis

In the research, the content analysis method was used for analyzing the data obtained through interviews. The content analysis was coded manually. The goal of content analysis is to extract meanings from text and image data (Creswell, 2017). In this research, the data were divided into themes and codes by two experts. Interviews were first decrypted for analysis. Then, codings were performed, and themes were organized.

According to Yıldırım and Şimşek (2018), for the validity and reliability of research, credibility (internal validity) is essential, and data should be continuously scrutinized with a critical eye, from the data collection process to analysis and interpretation, to ensure that the findings align with reality. In this research, the data was collected from different data sources and critically questioned and analyzed by two researchers, and the consistency of the results was checked. Transferability (External Validity) according to Yıldırım and Şimşek (2018, s.293) means "the ability to generalize the research results to similar situations and environments." To achieve this, a purposeful sampling method was used and diversity was sought in the study group to reach teachers and administrators working in IYEP. Internal reliability (consistency) according to Yıldırım and Şimşek (2018) means the researcher should ask questions with a similar attitude in the interviews and record them, and one can look at the consistency in the conceptualization process during the data collection process and the consistency formed between the data and the results. To ensure this, the data collection tool was created with the opinion of 4 experts. Data was coded by two separate individuals and themes were created. The researcher similarly approached all participants. External reliability (confirmability) according to Yıldırım and Şimşek (2018) requires approaching the obtained findings objectively, distancing oneself from subjective judgments, and conveying what exists. To ensure this, the data was confirmed by experts and raw data was included in the presentation of the findings.

FINDINGS

The themes and codes reached as a result of the analysis of classroom teachers' opinions regarding the IYEP process and content are provided in Table 2.

Table 2. Views of Classroom Teachers on the Process and Content

Themes	View	Codes	Participants
Content	12	Useful	Z2, Z7, Z9, Z11, Z12, Z14, Z15, Z25, Z27, Z28, Z34, Z37
	11	Insufficient time	Z3, Z5, Z13, Z15, Z16, Z17, Z21, Z22, Z24, Z29, Z30
	7	Disliking	Z4, Z5, Z8, Z10, Z17, Z21, Z22
	6	Liking	Z1, Z2, Z3, Z13, Z15, Z23
	6	Insufficient resources	Z2, Z4, Z8, Z14, Z30, Z35
	3	Basic concepts	Z1, Z2, Z28
	2	One-on-one care	Z1, Z25
	2	Adding 3rd-grade gains	Z5, Z36
	1	Literacy activities	Z35
	1	Should be improved	Z8
Process	13	Positive	Z2, Z3, Z8, Z9, Z10, Z18, Z19, Z21, Z25, Z27, Z27, Z34, Z35
	11	Should be extended	Z3, Z5, Z13, Z15, Z16, Z17, Z22, Z23, Z24, Z29, Z30
	3	Boring for the student	Z23, Z33, Z36
	2	Hours should be increased	Z3, Z24
	2	Low differentiation	Z6, Z23
	2	Weekday issue	Z18, Z23
	1	Should be shortened	Z36
	1	Student selection	Z24
	1	Module transition problem	Z24

According to Table 2, classroom teachers formed the codes "useful, insufficient time, disliking, liking, basic concepts, one-on-one care, adding 3rd grade gains, literacy activities, should be improved" under the "content" theme. Under the "process" theme, the codes are "positive, should be extended, boring for the student, hours should be increased, low differentiation, weekday issue, should be shortened, student selection and module transition problems." Opinions of Z25 and Z36 related to these themes and codes are provided.

Z25: "... In a class of 30, we can have students who cannot learn or lag behind. We could ensure their learning by paying more attention to them either one-on-one or in small groups like 3 or 4 students..."

Z36: "It is a bit of a taxing process, one that can bore the students. For students who are very new to reading, it has a very good content."

Opinions of classroom teachers regarding the differentiation observed in students at the end of IYEP are provided in Table 3.

Table 3. Views of Classroom Teachers on Students' Differentiation Situations

Themes	Views	Codes	Participants
Positive differentiation	7	Literacy	Ö9, Z10, Z16, Z20, Z25, Z32, Z35
	7	Participation / If there is desire	Z3, Z6, Z8, Z13, Z18, Z19, Z28
	4	Arithmetic/mathematics	Z9, Z16, Z23, Z35
	4	Development	Z3, Z4, Z24, Z37
	4	Improvement in basic gains	Z2, Z11, Z33, Z37
	4	Increased in one-on-one interaction	Z24, Z26, Z27, Z30
	3	Completing deficiencies	Z7, Z22, Z31
	3	Self-confidence in the student	Z4, Z6, Z22
	2	Academic achievement	Z12, Z21
	1	Student activation	Z4
	1	One-on-one care	Z5
	1	Contribution to the student	Z15
	1	Receiving feedback	Z16
	1	Short-term differentiation	Z17
	1	Parent participation	Z3
	1	Overall positive differentiation	Z29
1	Short-term	Z17	
No positive differentiation	1	No differentiation	Z34
	1	Insufficient gains in Turkish grammar	Z23
	1	No academic progress	Z34
	1	No progress in Turkish modules 2 and 3	Z36
	1	Low participation	Z1
1	Mathematics is unclear	Z20	

According to Table 3, two themes have been formed as "positive differentiation" and "no positive differentiation." Under the "positive differentiation" theme, codes such as "literacy, Participation/If there is desire, arithmetic/mathematics, development, improvement in basic gains, increased one-on-one interaction, completing deficiencies, self-confidence in the student, academic achievement, student activation, one-on-one care, contribution to the student, receiving feedback, short-term differentiation, parent participation,

overall positive differentiation, short-term" have been established. Under the "no positive differentiation" theme, codes are "No differentiation, insufficient gains in Turkish grammar, no academic progress, no progress in Turkish module-2 and 3, low participation, mathematics is unclear." Opinion of Z29 related to these themes and codes is provided

Z29: "I can definitely say that there is a differentiation. Even though individual differences occasionally show up, looking at the general picture, we can say that it has a positive effect on the student."

Upon analysis of classroom teachers' opinions related to the IYEP course teacher, 3 themes have been formed. Codes related to these themes are provided in Table 4.

Table 4. Views of Classroom Teachers on the Course Instructor

Themes	View	Codes	Participants
Their own teacher	24	Knowing the Student	Z1, Z2, Z4, Z5, Z6, Z8, Z12, Z13, Z14, Z17, Z18, Z19, Z21, Z22, Z25, Z26, Z27, Z28, Z29, Z31, Z34, Z35, Z36, Z37
	2	Knowing the Parent	Z26, Z28
	2	Knowing the Teacher	Z29, Z33
	1	Student's age	Z11
	1	Motivation	Z9
	1	Fear of the teacher	Z32
Different teacher	4	Different technique	Z15, Z20, Z24, Z25
	3	Feeling better	Z7, Z30, Z37
	2	Negative prejudice	Z3, Z23
	1	Taking seriously	Z20
	1	Different communication	Z23
Does not matter	1	Depends	Z10
	1	Efficient teacher	Z16

According to Table 4, three themes have been formed: "their own teacher", "different teacher", and "does not matter". Based on the opinions of teachers who expressed views in favor of the student's own teacher, the following codes were established: "knowing the student, knowing the parent, knowing the teacher, student's age, motivation, and fear of the teacher". Those who expressed the view that a different teacher should be the course teacher established codes such as "different technique, feeling better, negative prejudice, taking seriously, and different communication". Those who expressed the view that it does not matter in terms of the course teacher have established two codes: "depends" and "efficient teacher".

Z2: "In my opinion, if the courses are taught by the students' own classroom teacher, it could naturally be more efficient and beneficial."

Z15: "... A new teacher, new techniques, and new things would be more advantageous."

The themes and codes formed as a result of analyzing teachers' opinions on the assessment tools used for IYEP are provided in Table 5.

Table 5. Teachers' Views on Assessment Tools

Themes	Views	Codes	Participants
Insufficient	5	Should be improved/enriched	Z2, Z9, Z10, Z19, Z23
	5	Distinctiveness	Z4, Z15, Z23, Z31, Z33
	5	Teacher should evaluate	Z4, Z18, Z19, Z24, Z30
	3	Insufficient	Z6, Z13, Z22
	1	Different assessment tools	Z6
	1	Post-module evaluation	Z12
	1	Primary schools should do it themselves	Z1
	1	Teacher should complete	Z14
	1	Advanced level	Z16
	1	Follow-up	Z17
	1	Engaging	Z27
Sufficient	7	Sufficient	Z8, Z10, Z25, Z29, Z30, Z35, Z36
	4	Appropriate for the content	Z5, Z28, Z34, Z37
	3	Successful	Z20, Z21, Z28
	2	Detailed	Z20, Z21
	2	Distinctiveness	Z32, Z37
	1	Appropriate to the objective	Z7
	1	Consistent with ÖBA ÖDA	Z11
	1	Appropriate for the level	Z5
	1	Easily applicable	Z32

According to Table 5, two themes have been formed: "insufficient" and "sufficient". The teachers who expressed views indicating insufficiency created the following codes: "should be improved/enriched, distinctiveness, the teacher should evaluate, insufficient, different assessment tools, post-module evaluation, primary schools should do it themselves, teacher should complete, advanced level, follow-up, and engaging". The teachers who expressed views indicating sufficiency established codes such as "sufficient, appropriate for the content, successful, detailed, distinctiveness, appropriate to the objective, consistent with ÖBA ÖDA), appropriate for the level, and easily applicable". Opinions of teachers coded Z9 and Z4 regarding the themes and codes are provided.

Z9: "It is insufficient; it needs to be enriched and should measure students from different aspects."

Z4: "...I mean, it might have been more effective if the teacher implemented it themselves."

The themes and codes regarding the strengths and weaknesses of IYEP from the perspective of classroom teachers are provided in Table 6.

Table 6. Strengths and Weaknesses of the Program According to Classroom Teachers

Themes	Views	Codes	Participants
Strengths	8	One-on-one care	Z1, Z2, Z4, Z15, Z26, Z27, Z35, Z36
	23	Academic achievement	Z2, Z4, Z5, Z6, Z7, Z8, Z9, Z10, Z12, Z13, Z14, Z18, Z20, Z21, Z22, Z24, Z28, Z29, Z30, Z32, Z34, Z35, Z37
	1	Peer learning	Z2
	4	Small class size	Z2, Z20, Z26, Z27
	3	Development	Z2, Z28, Z31
	2	Socialization	Z2, Z35
	1	Value acquisition	Z3
	6	Self-confidence	Z5, Z10, Z22, Z35, Z36, Z37
	7	Extra time	Z10, Z11, Z15, Z21, Z25, Z27, Z33
	1	Basic gains	Z12
	1	Book	Z16
	1	Program	Z17
	2	Different teacher	Z20, Z23
	3	Equal opportunity	Z21, Z23, Z24
	7	Compensation	Z19, Z20, Z22, Z28, Z30, Z31, Z32
	1	Duration	Z26
	Weakness	2	Insufficient parental support
9		Labeling	Z2, Z3, Z6, Z14, Z21, Z22, Z27, Z28, Z32
2		Parent negative perception	Z3, Z27
5		Weekday	Z4, Z20, Z28, Z32, Z37
6		Late grade	Z4, Z14, Z18, Z20, Z25, Z31
6		Insufficient material/resources	Z4, Z5, Z12, Z13, Z14, Z16
1		Parental approval	Z4
1		Transportation issue	Z4
2		Absence	Z6, Z32
1		Learning environment	Z7
1		Mathematics skills	Z9
1		Modules in one book	Z5
4		Content	Z10, Z15, Z21, Z34

1	Extra course load	Z11
6	Evaluation	Z12, Z13, Z23, Z24, Z31, Z33
3	Perception of inadequacy	Z14, Z26, Z27
1	Different teacher	Z14
8	Duration	Z16, Z17, Z24, Z30, Z31, Z32, Z35, Z36
1	Supervision	Z16
1	Feedback	Z16
1	Failure to achieve the objective	Z19
1	Economic adjustment	Z21
1	Administrative support	Z22
1	Guidance service	Z22
4	Reluctance/boredom	Z26, Z32, Z36, Z30
1	Supporting	Z29
1	Personal rights	Z31
1	Class size	Z32
1	One-on-one care	Z32

Based on Table 6, two themes have been formed: "strengths" and "weaknesses." Upon reviewing the teachers' opinions regarding the strengths, the following codes were formed: " One-on-one care, Academic achievement, Peer learning, Small class size, Development, Socialization, Value acquisition, Self-confidence, Extra time, Basic gains, Book, Program, Different teacher, Equal opportunity, Compensation, Duration." In terms of weaknesses, the codes formed based on teachers' opinions include: "Insufficient parental support, Labeling, Parent negative perception, Weekday, Late grade, Insufficient material/resources, Parental approval, Transportation issue, Absence, Learning environment, Mathematics skills, Modules in one book, Content, Extra course load, Evaluation, Perception of inadequacy, Different teacher, Duration, Supervision, Feedback, Failure to achieve the objective, Economic adjustment, Administrative support, Guidance service, Reluctance/boredom, Supporting, Personal rights, Class size, One-on-one care." Views from teachers coded Z10 and Z36 regarding the themes and codes are provided:

Z10: "It improved the reading and writing skills of children and fostered feelings of success and self-confidence..."

Z36: "Its weaknesses are that the children can get bored. Since it is a long process, having children stay at school all the time after the school day ends can be challenging. It can be hard for them to see their peers leaving for home while they remain at school."

Apart from classroom teachers, another group involved in the IYEP process is school administrators. The themes and codes derived from the analysis of the administrators' views on IYEP are provided in Table 7.

Table 7. Administrators' Views on the Process and Content of the Program

Themes	Views	Codes	Participants
Process	6	Insufficient duration	Y1, Y4, Y5, Y10, Y11, Y12
	2	Weekday	Y6, Y8
	1	2nd grade	Y1
	1	Non-adoption	Y2
	1	Extra time	Y6
	1	Progress	Y8
	1	Duration reduction	Y8
	1	Sufficient duration	Y9
	1	Reluctance	Y9
	1	Insufficient participation	Y11
	1	School's planning	Y12
	1	Regional conditions	Y13
	Content	7	Beautiful/useful
1		Supportive	Y3
2		Reinforcement	Y7, Y12
2		Literacy	Y8, Y11
1		Different fields	Y10
1		Insufficient gains	Y11
	1	Sufficient	Y13

According to Table 7, a theme titled "process and content" has been formed based on the views of the administrators. Regarding the "process" theme, the codes "insufficient duration, weekdays, 2nd grade, non-adoption, extra time, progress, duration reduction, sufficient duration, reluctance, insufficient participation, school's planning, regional conditions" have been established. In the "content" theme, the codes "beneficial/helpful, supportive, reinforcement, literacy, different fields, insufficient gains, sufficient" have been formed. Opinions of administrators coded as Y11 and Y13 are provided.

Y13: "...In terms of the courses implemented, it is sufficient, but the differences in students varying from region to region, province to province, even village to village, create challenges in program implementations."

Y11: "...The achievements were insufficient, and the time was very limited..."

The themes and codes resulting from the analysis of school administrators' views on the strengths and weaknesses of IYEP implementations are provided in Table 8.

Table 8. Strengths and Weaknesses of the Program According to Administrators

Themes	Views	Codes	Participants
Strengths	9	Academic achievement	Y1, Y2, Y5, Y6, Y7, Y8, Y10, Y11, Y13
	2	Compensation	Y1, Y9
	2	Personal development	Y7, Y13
	1	Self-confidence	Y9
	1	Class size	Y13
	1	Duration	Y13
Weaknesses	5	Negative perception	Y1, Y4, Y6, Y7, Y13
	4	Personal rights	Y2, Y4, Y9, Y10
	3	Labeling	Y3, Y9, Y13
	3	Desire	Y2, Y4, Y10
	2	Parent	Y3, Y12
	2	Weekday	Y1, Y7
	2	Duration	Y3, Y8
	1	Process	Y3
	1	3rd grade	Y3
	1	Equipment	Y12
	1	Attendance	Y13

According to Table 8, the themes "strengths and weaknesses" have been established. For the strengths, the codes "academic achievement, compensation, personal development, self-confidence, class size, duration" have been formed. For the weaknesses, the codes "negative perception, personal rights, labeling, desire, parent, weekday, duration, process, 3rd grade, equipment, attendance" have been established. Opinions of administrators coded as Y2 and Y3 related to these themes and codes are provided.

Y2: “We have seen significant benefits in ensuring that students who are academically behind or lagging compared to their peers catch up, especially in subjects like mathematics and Turkish.”

Y3: “In terms of parents, whether positive or negative, our parents are so indifferent. We call their children, and some parents do not even ask why, like 'what is this about? why did you call them?'. We did not get any negative or positive feedback. I wish they'd at least give some response, so we would know.”

Apart from classroom teachers, another group that plays a role in the IYEP process is guidance counselors. The analysis of guidance teachers' views on IYEP and the corresponding themes and codes are provided in Table 9.

Table 9. Guidance Teachers’ Views on the Process and Content of the Program

Themes	Views	Codes	Participants
Content	2	Useful	R1, R3
	1	Resources/activities	R2
	1	Basic gains	R4
	1	Satisfying	R4
Process	1	Development	R1
	1	Small class size/one-on-one training	R2
	2	Academic achievement	R2, R3
	1	Socialization	R2
	1	Convenience	R3
	1	Critical period	R4
	2	Early/other grade	R1, R5
	1	Forgetfulness	R5

According to Table 9, when the views of guidance teachers are examined, two themes named "content and process" have been established. In the content theme, the codes "useful, resources/activities, basic gains, satisfying, development, small class size/one-on-one training" have been formed. In the process theme, the codes "academic achievement, early/other grade, development, small-class size/one-on-one education, socialization, convenience, critical period, and forgetfulness" have been established. Opinions of guidance teachers coded as R1 and R3 related to these themes and codes are provided.

R1: “However, I would have liked it to be included in other grades as well.”

R3: “I believe it provides the opportunity for students lagging behind to somehow catch up with their peers.”

The themes and codes related to the strengths and weaknesses of IYEP from the perspective of guidance teachers are given in Table 10.

Table 10. Strengths and Weaknesses of the Program According to Guidance Teachers

Themes	Views	Codes	Participants
Strengths	3	Academic achievement	R1, R3, R4
	2	Compensation	R1, R5
	1	Content	R4
	1	Negative perception	R1
	1	Self-confidence	R2
	1	Motivation	R2
	1	Interest	R2
	1	Permanence	R3
Weaknesses	3	3rd grade	R1, R4, R5
	1	Informing	R1
	2	Content	R2, R3
	1	Voluntary teacher	R2
	1	Duration	R3

According to Table 10, themes named "strong and weak" have been formed for the strengths and weaknesses of the IYEP course according to the guidance teachers. For strengths, the codes "academic achievement, compensation, content, negative perception, self-confidence, motivation, interest, permanence" have been formed, while for weaknesses, the codes "3rd grade, informing, content, voluntary teacher, and duration" have been established. Opinions of guidance teachers coded as R5 and R2 related to these themes and codes are provided.

R5: “Its strength is to reinforce the weak points of the child. It has a significant effect on this.”

R2: “Primarily, the increase in students' self-confidence, along with the increase in motivation and the increase in interest towards school, are among the advantages of IYEP.”

DISCUSSION and CONCLUSION

In primary schools, regarding the supplementary program, evaluations are made collectively for common questions based on the opinions of classroom teachers, administrators, and guidance teachers. However, for questions exclusively posed to classroom teachers, evaluations were only made for them. When examining the opinions of classroom teachers, administrators, and guidance teachers about the process and content of IYEP, they generally stated that it is positive and beneficial. They mentioned that it enhances basic achievements, and that one-on-one care increases academic achievement. In addition, classroom teachers reached the conclusion that differentiation in

students' learning has been positive with IYEP. For its strengths and weaknesses, classroom teachers, administrators, and guidance counselors emphasized the positive developments in students' academic achievements. In line with the findings of this study, there's a prevailing consensus in the literature that applications of IYEP typically enhance performance outcomes (Açilet et al., 2021; Anılan and Özgan, 2020; Aydın and Yakar, 2020; Balantekin, 2020; Dilekçi, 2019; Kaçar and Uz, 2019; Özdemir, 2022; Özdoğru, 2022; Polatlı and Büyüksahin, 2020; Sarıdoğan, 2019; Toptaş and Karaca, 2020). Studies conducted abroad on after-school programs (Cosden et al., 2004; Lauer et al. 2006; McKenzie, 2019; Shurnow, 2001) also conclude that these programs improve students' achievements and other aspects.

Regarding the process and content, classroom teachers, guidance teachers, and administrators mentioned difficulties related to the program duration and module durations. Holding the program during the week was also identified as a problem in terms of time and participation. Additionally, all participating groups concluded that the main weakness of the program is its duration. This result is consistent with other studies that have expressed issues with the insufficient duration in IYEP and the time allocated to modules (Bulu and Avcı, 2022; Dilekçi, 2019; Açıl et al., 2021; Gürol and Gül, 2021; Özdoğru, 2022; Polatlı and Büyüksahin, 2022; Toptaş and Karaca, 2019; Yıldız and Kılıç, 2020). Contrarily, some studies have argued that the duration is adequate (Cesur and Yetkiner, 2020; Kırnık et al., 2019).

Classroom teachers have stated that the IYEP course should be taught by their classroom teachers due to reasons such as knowing the student, knowing the parents, and students recognizing their teacher. This is in line with studies that emphasize the importance of a student knowing their own teacher (İğli and Ulutaş, 2020; Polatlı and Büyüksahin, 2022). Based on the feedback from classroom teachers regarding evaluation tools, they generally found the evaluations to be insufficient. They identified shortcomings in the evaluation components of the modules, emphasizing the need for refined assessment instruments. This observation aligns with previous studies that have similarly underscored challenges with evaluation methodologies and tools for student selection process. (Açıl et al., 2021; Dilekçi, 2019; Gül and Gürol, 2021; Kaçar and Uz, 2019; Yıldız and Kılıç, 2020).

Regarding IYEP program in primary schools, classroom teachers and administrators pointed out weak aspects like parental indifference, negative perceptions, and violations of personal rights. Similarly, other studies (İğli and Ulutaş, 2020; Kaçar and Uz, 2019; Kırnık et al. 2019; Kozikoğlu and Tosun, 2020; Polatlı and Büyüksahin, 2022; Sarıdoğan, 2019;) highlight parental

indifference, lack of information about the program, and negative attitudes. Another weakness identified is the violation of personal rights. Other studies related to IYEP (Açıl et al. 2021; Yıldız and Kılıç, 2020) have also reached a conclusion that there are deficiencies regarding personal rights.

In a nutshell, IYEP in primary schools has received positive feedback for enhancing academic outcomes. However, there are concerns regarding its duration. Also, classroom teachers emphasized the need for the program to be taught by the primary classroom teachers due to their established relationship with students. Additionally, the evaluation tools within the program were viewed as needing improvement. Furthermore, challenges such as parental indifference, negative perceptions, and violations of personal rights have been highlighted. To enhance the program's effectiveness, we should adjust its length, improve testing methods, and use the strong bond between students and classroom teachers. Addressing issues like parent concerns and protecting personal rights might boost the program's positive effect.

REFERENCES

- Açıl, H., Ekinci, A., Dündar, M., and Bilgiç, R. (2021). Sınıf öğretmenlerinin İlkokullarda Yetiştirme Programına (İYEP) ilişkin görüşlerinin. *Elektronik Sosyal Bilimler Dergisi*, 10(20), 257–277. Retrieved from <https://dergipark.org.tr/pub/ejedus/issue/65989/985034>
- Anılan, H., and Özgan, K. (2020). Teachers opinion about support program in primary schools (SPPS). *Turkish Online Journal of Qualitative Inquiry*, 11(1), 56-84. <https://doi.org/10.17569/tojqi.621543>
- Arı, S., and Çalışoğlu, M. (2022). Implementer Views on Whether Catch-Up Education Program in Primary Schools (Iyep) Could Be Performed Via Distance Education. *International Journal of Progressive Education*, 18(3), 301–313. <https://doi.org/10.29329/ijpe.2022.467>
- Aydın Gürler, S. (2020). Fen bilimleri dersinin ilkokullarda yetiştirme programına (İYEP) dâhil edilmesine ilişkin öğretmen görüşleri. *YYÜ Eğitim Fakültesi Dergisi*, 17(1), 266–294. <https://doi.org/10.33711/yyuefd.691587>
- Aydın, S., and Yakar, L. (2020). İlkokullarda yetiştirme programında (İYEP) karşılaşılan sorunlar, paydaşlarına olan katkıları ve çözüm önerileri. *Trakya Eğitim Dergisi*, 795–814. <https://doi.org/10.24315/tred.642786>
- Balantekin, Y. (2020). İlkokullarda yetiştirme programı (İYEP) Türkçe dersinin öğretmen görüşlerine göre değerlendirilmesi : Bir karma yöntem araştırması. *Türk Eğitim Bilimleri Dergisi*, 18(1), 153–184. <https://doi.org/10.37217/tebd.673849>
- Balkan, S., and Küçüktepe, C. (2021). Evaluation of class teachers' opinions on the remedial program in primary schools (RPPS). *European Journal of Alternative Education Studies*, 6(1). <http://dx.doi.org/10.46827/ejae.v6i1.3735>
- Bulu, D. and Avcı G. (2022). Teacher's Opinions About Remedial Education Program in Primary Schools (IYEP), ilkokullarda yetiştirme programı (iyep) hakkında öğretmen görüşleri. *The Journal of Limitless Education and Research*, 7(3), 391-421. <https://doi.org/10.29250/sead.1138811>
- Büyüköztürk, Ş., Kılıç Çakmak, E., Akgün, Ö. A., Karadeniz, Ş. and Demirel, F. (2011). *Bilimsel araştırma yöntemleri* (8th ed). Pegem Akademi.
- Cesur, B., and Yetkiner, A. (2020). İlkokullarda yetiştirme programı (İYEP) hakkında öğretmen görüşlerinin belirlenmesi. *Başkent University Journal of Education*, 7(2), 375–392. Retrieved from <https://buje.baskent.edu.tr/index.php/buje/article/view/340>

- Cosden, M., Morrison, G., Gutierrez, L., and Brown, M. (2004). After-School Activities on School Success. *Theory Into Practice*, 43(3), 220-226. https://doi.org/10.1207/s15430421tip4303_8
- Creswell, J. W. (2017). *Araştırma deseni nitel, nicel ve karma yöntem yaklaşımları* (3rd ed). S. B. Demir (Trans. Ed.). Eğiten Kitap Yayınları. (Original work published 4th ed.)
- Çimşir, S. (2021). *İlkokulda akademik başarısı düşük öğrenciyi anlamak üzerine*. Z. N. Baysal, E. Sarıcan and N. Şener (Ed.). İlkokul üzerine güncel konular-I in (s. 290-305). Pegem Akademi. Retrieved from [e-book] <https://www.turcademy.com/tr>
- Dilekçi, Ü. (2019). İlkokullarda yetiştirme programına (iyep) ilişkin öğretmen görüşleri. *Milli Eğitim Dergisi*, 48(1), 433-454. Retrieved from <https://dergipark.org.tr/tr/pub/milliegitim/issue/51765/674030>
- Ergen, Y., and Batmaz, O. (2019). İlkokul 4. Sınıf öğrencilerinin okuduğunu anlama stratejilerini kullanma düzeyleri ile okuduğunu anlama başarıları arasındaki ilişki. *Mehmet Akif Ersoy Üniversitesi Eğitim Fakültesi Dergisi*, 49, 130-147. <https://doi.org/10.21764/maeuefd.425949>
- Güder, O., Demir, M., Özden, M., and Aras, Z. (2023). Sınıf öğretmenlerinin ilkokullarda yetiştirme programının (İYEP) işleyiş sürecine ilişkin görüşleri. *Dumlupınar Üniversitesi Eğitim Bilimleri Enstitüsü Dergisi*, 7(1), 107-133. Retrieved from <https://dergipark.org.tr/tr/pub/debder/issue/78026/1150885>
- Güleryüz, H. (2004). *Türkçe ilkokuma yazma öğretimi*. Ankara: Pegem Yayıncılık.
- Güneş, F. (2021). 21. Yüzyılda ilkokulun değişen rolleri. Z. N. Baysal, E. Sarıcan ve N. Şener (Ed.). İlkokul üzerine güncel konular-I in (s. 2-19). Pegem Akademi. Retrieved from [e-book] <https://www.turcademy.com/tr>
- Güney, K. and Yaman, E. Y. (2022). Evaluation of student activity books used within the scope of education program in primary schools according to teachers' views. *E-International Journal of Educational Research*, 13(6), 225-242. <https://doi.org/10.19160/e-ijer.1210660>
- Gürol, M., and Gül, M. (2021). İlkokullarda yetiştirme programının (İYEP) işlevselliğinin incelenmesi. *Trakya Eğitim Dergisi*, 11(1), 16-33. <https://doi.org/10.24315/tred.629316>
- Hökelekli, H., and Çelik, A. (2021). İlkokullarda yetiştirme programı'nın yeterliliğine dair öğretmen görüşleri:İstanbul-Avcılar örneği. *International Social Mentality and Researcher Thinkers Journal*, 7(42), 399-410. <https://doi.org/10.31576/smryj.816>

- İğli, O., and Ulutaş, M. (2020). İlkokullarda yetiştirme programı hakkında öğretmen ve okul yöneticileri görüşleri. *Social Paradigm International Journal Of New Paradigm*, 3(2), 1–15.
- Kaçar, H. and Uz, V. (2019). İlkokullarda yetiştirme programının sınıf öğretmenlerinin gözlem ve deneyimlerine göre incelenmesi. *The Journal of International Education Science*, 21 (6), 20-53. <http://dx.doi.org/10.29228/INESJOURNAL.39234>
- Kale, M., and Demir, S. (2021). İlkokullarda yetiştirme programı(İYEP) uygulamalarının öğrencilerin okula bağlılık düzeylerine katılışının incelenmesi. *Milli Eğitim*, 50(232), 161–175. <https://doi.org/10.37669/milliegitim.740561>
- Karatay, H. (2010). İlköğretim öğrencilerinin okuduğunu kavrama ile ilgili bilişsel farkındalıkları. *Türklük Bilimi Araştırmaları*, 27(27), 457–475. <https://dergipark.org.tr/pub/tubar/177244>
- Kırmık, D., Susam, E. and Özbek, R. (2019). İYEP (ilkokullarda yetiştirme programı) uygulamalarına ilişkin sınıf öğretmenlerinin görüşleri. *Milli Eğitim Dergisi*, 48(1), 387-415. <https://dergipark.org.tr/pub/milliegitim/issue/51765/674003>
- Kızılgın, A. and Baştuğ, M. (2020). Okuma motivasyonu ve okuduğunu anlama becerisinin akademik başarıyı yordama düzeyi . *Journal of Language Education and Research* , 6 (2) , 601-612 . <https://doi.org/10.31464/jlere.767022>
- Kozikoğlu, İ., and Tosun, Y. (2020). İlkokullarda yetiştirme programına (İYEP) ilişkin öğretmen görüşleri: nitel bir çözümleme. *Ankara Üniversitesi Eğitim Bilimleri Fakültesi Dergisi*, 53(3), 903–930. <https://doi.org/10.30964/auebfd.679050>
- Lauer, P. A., Akiba, M., Wilkerson, S. B., Aphorp, H. S., Snow, D., and Martin-Glenn, M. L. (2006). Out-of-school-time programs: A meta-analysis of effects for at-risk students. *Review of Educational Research*, 76(2), 275–313. <https://doi.org/10.3102/00346543076002275>
- MEB. (2018). İlkokullarda yetiştirme programı (İYEP). Ankara. Retrieved from https://tegm.meb.gov.tr/meb_iys_dosyalar/2018_11/08133913_YYEP-MYFREDAT.pdf
- MEB. (2019). İlkokullarda yetiştirme programı (İYEP). Ankara. Retrieved from <http://iyep.meb.gov.tr/programlar/detay/Mufredat/1>
- McKenzie, K. (2019). The effects of poverty on academic achievement. *BU Journal of Graduate Studies in Education*, 11(2), 21-26.
- Özçakır Sümen, Ö. (2021). İlkokul öğrencilerinin matematiksel bilgiyi farklı temsil biçimlerine dönüştürebilme becerileri. *EKEV Akademi Dergisi*, 87,

507-524.

Retrieved

from

<https://dergipark.org.tr/tr/pub/sosekev/issue/71551/1151420>

- Özdemir, M. (2022). İlkokullarda Yetiştirme Programı (İYEP)'nin Okul Yöneticileri Tarafından Değerlendirilmesi. *International Social Sciences Studies Journal*, 8 (101), 2648-2662. <http://dx.doi.org/10.29228/8/sss.63811>
- Özdoğan, M. (2022). İlkokullarda yetiştirme programı'nın (İYEP) değerlendirilmesi. *Bilim, Eğitim, Sanat ve Teknoloji Dergisi (BEST Dergi)*, 6(1), 53-63. Retrieved from <https://dergipark.org.tr/tr/pub/bestdergi/issue/68795/925320>
- Özer, M., Gençoğlu, C., and Suna, H. E. (2020). Türkiye'de eğitimde eşitsizlikleri azaltmak için uygulanan politikalar. *Ondokuz Mayıs Üniversitesi Eğitim Fakültesi Dergisi*, 39(2), 294-312. Retrieved from <https://dergipark.org.tr/tr/pub/omuefd/issue/58553/828176>
- Patton, M. Q. (2018). *Nitel araştırma ve değerlendirme yöntemleri* (2nd ed). M. Bütün ve S. B. Demir (Trans. Ed.). Pegem A. (Original work published 3rd ed.)
- Polatlı, B., and Büyükşahin, Y. (2022). İlkokullarda yetiştirme programı (İYEP) sürecinde görev alan sınıf öğretmenlerinin programa yönelik görüşlerinin değerlendirilmesi. *Bartın University Journal of Faculty of Education*, 11(3), 617-646. <https://doi.org/10.14686/buefad.1065687>
- Sarıdoğan, E. (2019). *İlkokullarda yetiştirme programı'nın 3. ve 4. sınıf öğrencilerinin başarılarına etkisi* (Tez No. 587977), [Yüksek lisans tezi, Aydın Adnan Menderes Üniversitesi]. Yükseköğretim Kurulu Ulusal Tez Merkezi.
- Shumow, L. (2001). Academic effects of after-school programs. *IL: ERIC Clearinghouse on Elementary and Early Childhood Education. (ERIC Document Reproduction Service No. ED 458010)*.
- Suna, H. E., Şensoy, S., Parlak, B., and Özdemir, E. (2020). TIMSS 2019 Türkiye ön raporu. Ankara: No. 15. MEB eğitim analiz ve değerlendirme raporu serisi
- Tarhan, B., and Bayar, A. (2023). İlkokullarda yetiştirme programına (İYEP) ilişkin sınıf öğretmenlerinin görüşlerinin değerlendirilmesi. *Eğitim ve Öğretim Araştırmaları Dergisi*. 12(2). 92-106. Retrieved from http://www.jret.org/FileUpload/ks281142/File/07_makale_2023_mayis_tarhan_ve_bayar.pdf
- Toptaş, V., and Karaca, T. E. (2019). İlkokullarda yetiştirme programı(İYEP) kapsamındaki matematik derslerini yürüten sınıf öğretmenlerinin

- görüşlerinin incelenmesi. *Milli Eğitim Dergisi*, 48(1), 417–431. Retrieved from <https://dergipark.org.tr/tr/pub/milliegitim/issue/51765/674016>
- Türk, C., and Bedir, G. (2021). İlkokul 4. sınıf öğrencilerinin matematik kaygısı ile ders başarısı arasındaki ilişki. *Eğitim Yansımaları*, 5 (2), 73-88. Retrieved from <https://dergipark.org.tr/tr/pub/eduref/issue/67767/984529>
- Yenilmez, K., and Özbey, N. (2006). Özel okul ve devlet okulu öğrencilerinin matematik kaygı düzeyleri üzerine bir araştırma. *Eğitim Fakültesi Dergisi*, 19(2), 431–448. <https://doi.org/10.19171/uuefd.76630>
- Yıldırım A., and Şimşek, H. (2018). *Sosyal bilimlerde nitel araştırma yöntemleri*. Ankara: Seçkin.
- Yıldız, V. A., and Kılıç, D. (2020). İlkokullarda yetiştirme programı (İYEP) kurs sürecinin öğretmen görüşlerine göre değerlendirilmesi, *Turkish Studies- Educational Sciences*, 15(2), 1399-1410. <https://dx.doi.org/10.29228/TurkishStudies.40293>