ANADOLU UNIVERSITY

AUJEF

SINCE 1984

Anadolu University
Journal of Education Faculty

Volume 9 - Issue 1

https://aujef.anadolu.edu.tr

Print ISSN: 1300-5448
Online ISSN: 2602-2249

Volume 9, Issue 1, March 2025
Print ISSN: 1300-5448
Online ISSN: 2602-2249
DOI: 10.34056/aujef

Anadolu University Journal of Education Faculty (AUJEF)

• Publisher

Anadolu University Education Faculty

• Owner

Anadolu University, Türkiye

• Period

AUJEF (Since 1984) is an international peer-reviewed journal published four times yearly.
(March, June, September, December)

• Publication Language

English

• Abstracting and Indexing

Education Full Text (H. W. Wilson), DOAJ, ESJI, SOBIAD, EBSCO Essentials

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Aim and Scope

Anadolu University Journal of Education Faculty (AUJEF), which published its ***first issue in 1984*** (Print ISSN: 1300-5448, Online ISSN: 2602-2249) is a blind, peer-reviewed, open-access, free-of-charge international scientific academic journal published in educational sciences four times a year (March, June, September, and December). Besides, the AUJEF can publish additional issues in exceptional circumstances. AUJEF aims to present the compilation of up-to-date and innovative research papers, reviews, and argumentative essays on education in general and teacher education in particular. It is hoped that the studies published in AUJEF will provide the basis for timely discussions on the various areas of teacher education and give direction to innovative research and practices.

The papers published in AUJEF are also expected to raise issues related to teacher education in various field areas, open up discussions related to those issues, and suggest different methods of handling those issues or solving the related problems. Authors who will contribute to AUJEF are expected to consider the following rules.

- Studies to be published in AUJEF must be conducted in any area of educational sciences, especially teacher education.
- AUJEF is published in English only. Article review processes are carried out only in English. Manuscripts not full-text in English at the first submission will be returned to the author.
- The authors can be carried out in quantitative, qualitative, or mixed-method research.
- Literature analyses, meta-analyses, meta-synthesis studies, and book reviews can be sent to AUJEF for reviewing and publication.
- AUJEF prioritizes research papers. Attention is paid to the issue of whether the number or quantity of review papers should overtake the number of research papers.

From the Editor

Dear Colleagues and Readers

It has been exactly 41 years since the first issue of AUJEF. We have added all the issues of AUJEF published in print between 1984-2004 to our journal's website (https://aujef.anadolu.edu.tr/). We are happy that AUJEF, which has existed for many years and is one of the important cornerstones of Turkish publishing history, has met with its roots. Digitizing the printed issues of AUJEF can be considered important regarding transferring cultural heritage to future generations and shedding light on the phases of Turkish publishing history. From this point of view, I would like to express my gratitude to Dr. Canan Çolak Yakar and Research Assistants Funda Kara, Gamze Davis and Güzin Başdemir who contributed to this process. In addition, as of this issue, we have made a radical change in the logo, cover and article template of AUJEF, giving AUJEF a more modern image. I would also like to thank Dr. Emel Güler for her valuable contributions to the design process of AUJEF. As of Volume 9 Issue 1, AUJEF will continue its 41-year publication life only in English. In this way, we hope that AUJEF will reach a global audience and attract the attention of international scholars. From this point of view, we have completely renewed our international editorial board and included valuable and respected academics to our editorial board. I am grateful to our esteemed international editorial board for being a part of AUJEF and contributing to the development process of AUJEF.

We are very pleased to bring you the latest and most comprehensive research studies in this issue (Volume 9 Issue 1). Six articles prepared by scholars from different disciplines of educational sciences are included in this issue; each sheds light on various dimensions of educational research.

The first article of this issue, "Effect of Technology-Enriched Learning Environment on Academic Achievement of Seventh-Grade Students in Quadrilaterals", prepared by Feyzullah Orman and Sevim Sevgi, reveals the power and potential of educational technologies while revealing the effects of technology-supported learning environments on the academic achievement of 7th grade students. In the study titled "Examination Of the Levels of Ethical Position of Philosophy Group Teachers and Their Perception of Metaphors Related to The Concept of Ethics", Duygu Göktaş and Birsel Aybek examine the ethical attitudes of philosophy teachers and the metaphors they use in this context in depth and question the place of ethical thinking in education.

The third article, "The Association between Mindfulness in Marriage and Marital Adjustment: The Mediating Role of Marital Problem Solving", written by Zülal Nur Almasarani and Orkide Bakalım, evaluates the relationship between mindfulness level in marriage and marital adjustment through the mediating role of problem-solving processes. In the study entitled "Administrator Opinions on the Use of Out-of-School Learning Environments in Science and Art Centers", Yaşar Dilber, Çağlar Köse and Aygün Yılmaz share the opinions of education administrators on out-of-school learning environments applied in science and art centers and offer important clues about alternative education areas. In the fifth article, "Administrators' Views on External Pressures Against Schools with High Images", the external pressures faced by schools with high images are discussed from the perspective of educational administrators, and striking findings on the relationship between educational policies and school image are revealed. "Foreign Language Teaching and Foreign Language Teacher Training Policies from the Ottoman Period to the Present" is the last article of this issue. In this study, Ferda Tokçalar analyzes foreign language teaching and foreign language teacher training policies from the Ottoman period to the present day in depth and presents important evaluations in historical perspective.

The new issue of AUJEF will inspire the educational community and practitioners and enrich academic discussions. Each article is qualified to contribute to developing innovative approaches in education by opening new horizons in its field. Therefore, I would like to thank all the authors who have found AUJEF as a platform to publish their work. I would also like to thank my colleagues on the Editorial Board and the valuable stakeholders who served as reviewers for improving the quality of the studies published in AUJEF. See you again in the second issue of the ninth volume.

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CONTENTS

(Volume 9, Issue 1, 2025)

ANADOLU UNIVERSITY

AUJEF

Anadolu University Journal of Education Faculty

aujef.anadolu.edu.tr

2025, 9(1), 1-23

Print ISSN: 1300-5448

Online ISSN: 2602-2249

RESEARCH ARTICLE OPEN ACCESS

Effect of technology-enriched learning environment on academic achievement of seventh-grade students in quadrilaterals*[3]

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*This research was approved by the Erciyes University Ethics Committee's Social and Human Sciences Ethics Committee's decision, No. 448, dated 25/10/2022.
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Article Info

DOI: 10.34056/aujef.1490036

Article History:

Received: 26/05/2024
Revised: 21/11/2024
Accepted: 07/02/2025

Keywords

Technology
Learning environment
Seventh grade
Quadrilaterals
Mathematics achievement

Highlights:

- Effect of technology-enriched learning environment.
- Seventh-grade students in the quadrilaterals achievement.
- A pre-test/post-test matched control group quasi-experimental design.

Abstract

This research examined the effect of a technology-enriched classroom environment on achievement and retention in quadrilaterals of seventh graders. The quasi-experimental design of quantitative research with a pre-test/post-test matched control group was chosen as the research design. The research population consists of seventh-grade students of a city in the Central Anatolian Region. A middle school with nine branches at the seventh-grade level was determined, the equivalence test was applied to the students, and the equivalent classes were determined. After the classes were determined, these classes were randomly distributed to the groups. It was ensured that two mathematics teachers from the determined groups, one mathematics teacher in the experimental and control group, and another mathematics teacher in the other experimental and control group. The current seventh-grade quadrilateral program was applied to the control groups, and the learning environment program enriched with technology was applied to the experimental groups. Descriptive statistics of the scores obtained from the equalization, pre-test, post-test, and retention tests were calculated. Then, normality tests of these tests were performed. In the analysis, item analyses were used for the achievement test, one-way analysis of variance (ANOVA) for the equalization test, independent samples t-test, Mann-Whitney U Test, and paired samples t-test were used within the scope of research problems. As a result of the research, statistically significant mean differences between the experimental and control groups favored the experimental groups between post-test and persistence test scores. According to the technology-enriched learning environment program, teaching quadrilaterals increases students' achievement and permanent learning. In line with the results obtained, some suggestions were made.

Citation: Orman F., & Sevgi, S. (2025). Effect of technology-enriched learning environment on academic achievement of seventh-grade students in quadrilaterals. *Anadolu University Journal of Education Faculty*, *9*(1), 1-23. https://doi.org/10.34056/aujef.1490036

1. Introduction

Mathematics teaching emphasizes practices and learning approaches that help increase students' interest and understanding of mathematics rather than just transferring knowledge theoretically and logically. One of the approaches suitable for this is technology-enriched learning (TEL) which is defined as learning in which technology-based tools and applications support any learning environment, and learning is improved in this way (Wang & Hannafin, 2005). TEL provides a source of learning paradigms of the information society in terms of revealing innovative trends and evaluating research results (Goodyear & Retalis, 2010).

Technology transforms the learning process and provides advanced opportunities to gain knowledge and skills (Goodyear & Retalis, 2010). The rapid development of technology, increased access to technology, and diversification of communication methods have brought about the need for technological change and educational growth (NCTM, 2015). Research attempts to show how and to what extent learning occurs in interaction with technology. These positive and negative consequences by TEL can inspire educators and future instructional technologies in terms of how learning can be created more effectively (Coldwell-Neilson, 2018). Technology should be used to support individuals in the knowledge-creation process, considering the opportunities and risks it creates (Daniela, 2018).

TEL can be achieved through computers, tablets, interactive whiteboards, dynamic geometry software, visualization tools, spreadsheets, computer-supported interactive learning applications, simulations, holograms, educational games, digital learning content, and similar applications (Goodyear & Retalis, 2010). TEL can be arranged as digital, hybrid, or face-to-face classes, online learning environments, and online open learning environments where many students can participate (Duval et al., 2017). Self-learning, collaborative, or didactic learning can be used at these TEL. Students can analyze information, take responsibility for learning, and accept innovations (Daniela, 2018). In TEL, emphasis is placed on teaching practices, equipment, and the physical conditions of the environment where teaching will take place (Tondeur et al., 2015). Technology supports existing strategies in learning and teaching and creates opportunities to produce new strategies (Flavin, 2020). TEL increases academic motivation, encourages student participation (Xu et al., 2019), supports students' achievements (Sarıaslan & Küçük-Demir, 2020), and retention of learning with different learning styles (Gülbahar, 2005). Students can produce arguments based on scientific findings and create products based on them with TEL. In a TEL, learners develop skills such as critical thinking, expressing their ideas, sharing, and manipulating (Goodyear & Retalis, 2010).

National Council of Teachers of Mathematics (NCTM) describes one of the six key principles in mathematics teaching as the technology principle: "Technology is essential in teaching and learning mathematics; it affects teaching and enhances learning" (NCTM, 2020; p.11). NCTM supports the effective use of technology to enhance understanding and intuition and enrich mathematics teaching. Within the scope of the Fatih Project in Turkey aims to prepare and effectively use TEL equipped with interactive boards, supported by audio-visual materials, animations, simulations, videos, and other learning objects, to actively use information communication technologies (ICT) in the learning and teaching process in schools (MoNE, 2011). As an important part of learning environments, ICT allows for a structured and multidimensional learning environment and increases achievement (Erduran, 2020; Hıdıroğlu, 2012; Sarıaslan & Küçük-Demir, 2020).

Online learning technologies include collaborative learning environments, social networks, digital content, digital games, mobile devices, cloud technology, three-dimensional printing, virtual laboratories, holograms, tablets, and wearable technologies (Badia, 2015). These applications enable versatile and individualization of learning. Geometry 2.0 tools such as GeoGebra, Cabri 3D, and Geometers Sketched support collaboration and enable learning by discovery (Joglar Prieto et al., 2014). Digital transformation gained momentum with Industry 5.0, Society 5.0, and Education 5.0. The Internet of Things, cyber-physical systems, internet services, collection of big data, and artificial intelligence software have made technology an indispensable part of life (Xing & Marwala, 2017). Structuring learning environments in

line with this transformation process can provide a more effective learning environment for today's digital natives.

Instructional technologies deeply affect the development of teachers and students, and the resulting product has a personal effect as much as the effect of the software, which gives students the chance to take responsibility for their learning. Its flexible use features promise responsible use and effective learning outside of school (Trouche & Drijvers, 2010). TEL enables students to make connections between algebraic and geometric representations that develop mathematical reasoning skills such as generalization, prediction, and proof (Zengin, 2021) and significantly increases achievement in sixth-grade angles compared to traditional teaching (Sarıaslan & Küçük-Demir, 2020). Dynamic geometry software significantly increases achievement compared to traditional tools (Ng et al., 2020). Using Geogebra increased student performance in analytical geometry (Saha et al., 2010). Technology-supported teaching differs significantly from traditional teaching based on geometry achievement and attitude (Deniz, 2019). The justifications and evidence skills in the argument structures of seventh-grade students differ depending on the use of technology (Sucu, 2021). To conclude, TEL can help students produce practical solutions and structure geometry that will contribute to their thinking and learning skills in the face of the abstract structure of geometry.

1.1. Use of Technology in Teaching Geometry

Along with the tools and applications, TEL aims to enhance learning and teaching. However, technology should not be used in isolation to develop a solution; instead, it should support mathematical logic and reasoning (Liang, 2016). Teachers are also expected to use instructional technologies at a certain level of proficiency. It is vital to recognize the features of these technologies and adapt them appropriately to TEL. Therefore, technology-enriched instruction must be carefully planned and designed with the right tools. Students' ability to generate ideas about geometry topics and test them through instructional technology enhances their higher-order thinking skills (Bozkurt & Ruthven, 2018). Instructional technologies are most effective when they help discover information through technology and evaluate its accuracy rather than simply presenting ready-made information (Bozkurt & Ruthven, 2018). There are various educational software that can be used to teach geometry. The most frequently encountered dynamic geometry software in the literature are GeoGebra, Cabri 3D, Geometer's Sketchpad, and Desmos. Teaching based on dynamic geometry software significantly positively affects students' achievement (Chan & Leung, 2014). Positive features of the use of dynamic geometry software have been determined, such as understanding concepts, preventing misconceptions, and providing ease of access to achievements and generalizations (Gürbüz & Gülburnu, 2013; Onal & Demir, 2013; Sarıaslan & Küçük-Demir, 2020). The use of dynamic geometry software increases interest in, and changes view towards mathematics positively and make the lessons more fun (Erdener & Gür, 2019; Özçakır-Sümen, 2022; Tuzer-Ünsal & Akay, 2020). On the other hand, it is recommended that instructional technologies be used to evaluate mathematics in a digital environment (Drijvers, 2018). The instructional technologies used in this study are briefly mentioned below.

GeoGebra, an open-source dynamic mathematics software, is a teaching tool for geometry and algebra calculations. Mathematical models, various activities, and simulations can be prepared and shared. GeoGebra has features that include both two- and three-dimensional drawing, a computer algebra system, process monitoring, recording, and sharing. Using GeoGebra transforms the student from a passive receiver into an active participant, supporting his creativity (Ljajko & Ibro, 2013). It meets the teaching objectives and can be adapted for students of different ages and levels (Zilinskiene & Demirbilek, 2015). It provides a rich learning process that directs students to use different strategies, approaches, and thinking skills (Hıdıroğlu & Bukova-Güzel, 2014). GeoGebra-supported teaching significantly increased achievement and retention of learning (Birgin & Topuz, 2021). GeoGebra has been used in this study for visualization and geometric drawing, primarily by teachers.

Desmos is a free online application designed to help everyone learn mathematics and express ideas mathematically. Desmos allows students to review their strategies, reflect on them, change them, and

see how the changes affect the whole (Gulli, 2021). Desmos is a tool that helps students discover mathematical concepts (Koştur & Yılmaz, 2017). The activities carried out with Desmos are effective in conceptual and procedural learning (Özer, 2023). Desmos was used in this study for visualization purposes, and it was chosen because students can easily use it.

Coogle is used to create mind maps and support learning. Mind mapping is a note-taking technique developed by Tony Buzan, and its structure resembles that of a nerve cell. Mind maps hierarchically relate information and increase the ease of remembering and retaining knowledge by supporting it with visual elements. Mind maps enable students to discover relationships between concepts, encourage creative thinking (Davies, 2011), and support learning mathematical concepts (Agustiani et al., 2019). Coggle was used in this study to create mind maps.

Storyboardthat helps create digital stories that learners of all levels can use for learning, teaching, and communication. Its' drag-and-drop platform allows learners to create their own stories and characters. There are options for paid and free use. Scenes, characters, fonts, text boxes, and many other features can be customized flexibly. Teachers design in-class materials and create educational content (Muhammad et al., 2023). Students can use digital storyboards to prepare group studies and projects. These drafts can be shared and saved to prepare an electronic portfolio. Digital storytelling achieves conceptual learning at the desired level, and students are interested in digital stories (Dinçer & Yılmaz, 2019) and increase student motivation and participation (Özpınar, 2017). Digital story applications focus on supporting learning and teaching. They aim to convey ideas to other people in the best possible way. It is a way for individuals to express their understanding concretely. Digital stories enable commonalities or contradictions in understandings to emerge (Parola et al., 2022). A storyboard has been utilized in this study for problem formulation, classification, and definition. Plickers allow quick feedback from students who are defined to the program. Based on the answers given by the students, it is determined which students are correct, incorrect, or unable to answer the question, and necessary feedback is given.

1.2. The Problem

TEL is interactive, dynamic, process-oriented, and analytical approaches open the doors to meaningful learning. Various instructional practices significantly contribute to teaching by revealing student creativity and potential. TEL transforms the traditional learning environments. It provides a dynamic, student-focused, highly interactive environment and emphasizes self-controlled learning. The opportunities provided by technology offer a wide range of tools to create unique representations and explore ideas and concepts (Saye & Brush, 2002). In addition to the radical effects of TEL on teaching methods, their goals and, therefore, their effects on the mathematical meaning formation and thinking skills in the learning process are also noted (Pea, 1987). Content-specific technologies in mathematics teaching include dynamic geometry software, interactive applications, manual calculators, data collection and analysis devices, and computer-based applications. Content-independent technologies include communication tools and Web-based digital media (NCTM, 2015). These technologies help students make sense of mathematical concepts and explore and define relationships.

The prevalence of tools that facilitate understanding concepts, such as modeling, graphics, and numerical calculation, enables the broader use of technology (Pea, 1987). TEL increases learning opportunities by reducing students' learning difficulties and increasing their interest and motivation (Demetgül & Baki, 2020). It contributes to developing metacognitive thinking and creative thinking skills (Gündüzalp, 2021). Using technology in the learning environment also enables the development of digital literacy skills (Grant, 2019). TEL affects achievement positively and significantly compared to traditional teaching (Hegedus et al., 2015; Kurvinen et al., 2020; Young, 2017) in sixth-grade subjects (Sarıaslan & Küçük-Demir, 2020). Sixth-grade students' misconceptions about height have been largely corrected at TEL (Senger, 2019), and their problem-solving skills have improved (Curaoğlu, 2012). In addition, students' positive opinions were recorded through TEL (Erduran, 2020).

TEL increases interest and motivation in mathematics, which is a reason for increased student achievement (Pari Condori et al., 2020; Wong & Wong, 2019). TEL enables the development of

knowledge and skills by offering new ways of thinking about mathematics learning (Radović et al., 2019). TEL applied in geometry had a more positive effect than in mathematics (Çavuş & Deniz, 2022). Technologies such as GeoGebra, augmented reality, computer, animation, video, graphing calculator, and learning management systems are important components of geometry teaching (Sunzuma, 2023). Software such as Geogebra, which is used for technology enrichment, appeals to different sensory organs (Reisa, 2010). In this context, enriching with technology, in line with Gardner's Multiple Intelligence Theory, can appeal to different sensory organs and increase success by providing various methods and learning environments suitable for the student.

Activities prepared in accordance with the TEL make it easier for students to understand concepts, improve their problem-solving skills, make lessons more enjoyable, eliminate misconceptions, make it easier for them to understand the subjects, increase their achievement, improve their attitudes towards mathematics, support permanent learning and are more successful than traditional teaching (Aparı, 2019; Dikovic, 2009; Genç, 2010; Öz, 2015; Saha et al., 2010; Türkoğlu, 2014; Yılmaz, 2019). In addition, TEL contributes to students' skills such as reasoning, modeling, creative thinking, and inference (Çolakoğlu, 2018; Filiz, 2009). Inspired by these studies, TEL can increase the achievement of seventh-grade students in quadrilaterals and provide retention of earnings.

The widespread use of technology has prompted researchers to focus on the methods of utilizing and the effects of Technology-Enhanced Learning (TEL) in mathematics education. Şahin et al. (2024) highlighted the significance of technology-enhanced proof activities in establishing relationships, discovering insights, and generating hypotheses. Özkartal and Öçal (2021) demonstrated the positive impact of technology-enriched learning activities on the achievements and perceptions of fourth-grade students studying symmetry. Akyüz (2018) explored the roles of lecturers in creating content within geometry and in supporting mathematical thinking through argumentation-based technology. Sarıaslan and Küçük Demir (2020) noted that technology significantly influenced student achievement in the topic of angles in the sixth grade, compared to traditional teaching methods. This study aims to enrich the literature by presenting evidence supported by an experimental study on quadrilaterals in the seventh grade.

The research aims to investigate the impact of TEL on achievement and retention concerning seventh-grade quadrilaterals. TEL fosters an analytical approach to the subject, enabling students to grasp the concepts better. TEL positively affects achievements in quadrilaterals, which is part of the sub-learning areas of the polygons segment in the seventh-grade mathematics curriculum. Challenges arise in comprehending and applying the properties of quadrilaterals, environments, and area relations (Gülbağcı, 2009). Educational software and learning objects designed for this purpose can facilitate a more accurate understanding of quadrilaterals.

Understanding the place and significance of technology in the teaching and learning process is crucial, as effective TEL applications relate closely to student achievement (International Society for Technology in Education, 2008). In this context, the study is deemed important for revealing the effectiveness of TEL on seventh-grade achievements in quadrilaterals. It is vital to explore the impact of TEL in identifying solutions for assessing students' achievements in quadrilaterals. The problem this research addresses is: How does TEL affect seventh-grade achievement and retention regarding quadrilaterals? The sub-problems of this research are:

- Is there a statistically significant mean difference between the pre-test, post-test, and retention test of the students in the control and experimental groups caused by TEL?
- Is there a statistically significant mean difference between the pre-test and post-test achievement of the students in the control and experimental groups caused by TEL?
- In teaching the subject of quadrilaterals, is there a statistically significant mean difference between the post-test and retention test scores of the students in the control and experimental groups?

2. Method

2.1. Research Design

A pre-test/post-test matched control group quasi-experimental design, one of the quantitative research, was chosen as the research model. In this design, groups are matched based on certain criteria. Matched groups are randomly assigned to treatment groups (Büyüköztürk et al., 2018). The two random experimental and control groups were created by impartial assignment, in which certain procedures are performed before and after the experiment (Fraenkel & Wallen, 2009). The group subject to the TEL is the experimental group. In this design, a pre-test is performed to determine whether the experimental and control groups show similar characteristics before the experiment, and the pre and post-test results are examined to reveal the effect of the TEL on the groups (Karasar, 2018). The effect of a TEL on seventh-grade students' achievement and permanent learning about quadrilaterals was examined. This study's independent variable was the TEL curriculum, and the dependent variables were pre, post, and retention tests.

2.2. Population and Sample

The population consisted of seventh-grade students from a city in the Central Anatolia. A middle school was selected from the city to determine the sample. Before selecting this school, information was obtained about the number of seventh-grade classes and students in the city and the mathematics teachers teaching these classes. Teachers have similar characteristics, and their knowledge about mathematical software has been an important factor in choosing a school. Since this school was easily accessible by the researcher, it was selected by an appropriate sampling method; "Appropriate sampling method is the collection of data from a sample that the researcher can easily reach." (Büyüköztürk et al., 2018, p.95). The distribution of students in classes is shown in Table 1.

Table 1. Student distribution in classes

Class	f	%	Class	f	%
A	32	11.2	F	32	11.2
B	32	11.2	G	31	10.8
C	32	11.2	H	32	11.2
D	31	10.8	K	32	11.2
E	32	11.2	Total	286	100

The researcher interviewed three teachers who taught seventh-grade mathematics at the selected school and gave detailed information about the research. As a result of the interviews, teachers voluntarily participated in the research. As given in Table 1, there are nine classes and a total of 286 students at the seventh-grade level in the school. To determine whether classes are equivalent to each other, an equalization test was prepared by taking expert opinions. The equalization test is explained in detail in the next section. As a result of the equalization test, classes were equivalent. Classes 7B, 7E, 7F, and 7K were determined by random selection. Thus, the sample was a total of 128 students in classes. Elif taught the mathematics lesson for 7B and 7E, and Ayşe taught the mathematics lesson for 7F and 7K. With random selection among these classes, the experimental groups were 7B and 7K, and the control groups were 7E and 7F.

Table 2. Descriptives of teachers

Teacher	Type of Faculty Graduated from	Education Level	Professional Experience	Experience of 7th Grade	Does Teacher Use Mathematics Software?
Elif	Education	Masters	14 Years	8 Years	Yes
Ayşe	Education	Masters	17 Years	10 Years	Yes

As shown in Table 2, Elif and Ayşe displayed similar characteristics. In the interviews, both teachers demonstrated knowledge of mathematical software such as GeoGebra, Cabri, and SketchPad. Additionally, they completed courses on mathematical software during their undergraduate and graduate studies. Teachers possessing similar characteristics have played a significant role in teacher selection.

The researcher held meetings with the teachers before and after the treatment to exchange ideas. Elif and Ayşe implemented the treatment, with the researcher periodically supporting the teachers during interviews. In particular, the researcher informed the teachers about mathematical software and its usage. The researcher did not actively engage in the treatment process, significantly contributing to the results' objectivity. One mathematics teacher manages one experimental and control group, while the second mathematics teacher manages the other experimental and control group. The groups are organized to determine whether technology-enhanced learning (TEL) is effective on quadrilaterals. Managing the process with a teacher raises the question of whether students' achievement is influenced more by the teacher rather than by TEL. Conducting the implementation of the research with two mathematics teachers enhances the study's objectivity.

2.3. Examining the Equivalence of Classes and Determining Groups

The selected school has nine classes, and to determine whether these classes are equivalent, the researcher prepared an equalization test consisting of questions from the MoNE Scholarship Examination from previous years. During the preparation and finalization of this test, the opinions of four experts, including three mathematics teachers and one faculty member from the elementary mathematics education department, were taken. The questions in the equivalence test cover the students' quadrilateral knowledge. It was prepared to determine whether the classes were equivalent or not.

There was a total of 20 questions in the equivalence test. Questions 2, 3, 4, 7, 8, 9, and 20 of the test are from the 2021 7th Grade Scholarship Exam. Questions 5, 10, 14, and 15 are from the 2020 7th Grade Scholarship Exam. The 12th question is from the 2019 7th Grade Scholarship Exam. The 13th question is from the 2018 7th Grade Scholarship Exam. The 19th question is from the 2017 7th Grade Scholarship Examination. Questions 6, 1, and 11 are from the 2022 6th Grade Scholarship Exam. Questions 16, 17, and 18 are from the 2021 6th Grade Scholarship Exam. The equalization test was administered to 9 classes in the first week of the second semester of the 2022-2023 academic year. As a result of the equalization test, descriptive statistics of the classes are given in Table 3.

Table 3. Descriptive statistics results of equalization test

Class	N	$\bar{X}$	Mod	Median	ss	Kustosis	Skewness	Kolmogorov-Smirnov		
								statistics	df	p
7A	32	51.88	50	50	23.44	-0.76	0.27	0.134	32	0.149
7B	32	50.31	45	45	20.12	0.39	0.37	0.135	32	0.143
7C	32	49.69	50	52.5	20	0.11	-0.05	0.147	32	0.077
7D	31	47.74	45	50	22.21	-0.94	0.1	0.143	31	0.109
7E	32	48.28	50	50	15.48	-0.48	-0.18	0.145	32	0.087
7F	32	51.1	50	50	19.04	-0.35	0.42	0.148	32	0.073
7G	31	49.03	45	50	23.32	-1.05	0.14	0.146	31	0.092
7H	32	48.91	45	45	21.91	0.13	0.9	0.143	32	0.093
7K	32	49.69	50	50	20.71	-0.14	-0.34	0.131	32	0.176

As given in Table 3, the mean, mode, and median values of the classes' equalization test scores are close. The kurtosis and skewness values of the classes' equalization test scores showed a normal distribution since they were between +1.5 and -1.5 (Tabachnick & Fidell, 2015). In addition, the normality test of the equalization test scores of the branches was conducted and the results are given in Table 3. The Kolmogorov-Smirnov test was performed since the number of students in the branches was n>30 (Bursal, 2017; Cevahir, 2020). According to the test results, it was seen that the p-value of each group was greater than 0.05. In light of these results, the equalization test scores of the branches showed a normal distribution.

Since the equalization test scores of the classes showed a normal distribution, a one-way analysis of variance (ANOVA) was run. First of all, the homogeneity test of the equalization test scores was performed based on classes, and the equalization scores showed a homogeneous distribution (FLevene (8, 277)= 1.239; p=0.276>0.05). Then, ANOVA was performed to determine whether the classes were equivalent, and the results are shown in Table 4. There is no statistically significant mean difference between the equalization test scores of the classes (F (8, 285) = 0.127; p=0.998>0.05). The mathematics and geometry knowledge of the students in the classes are close to each other. After the equivalence of

the classes was ensured, classes 7B, 7E as Elif's class, 7F, and 7K as Ayşe's class were determined by random selection. Then, again, random selection determined which classes were the experimental and control groups.

Table 4. ANOVA results on equalization test scores of classes

Source	Sum of Suares	df	Mean of Squares	F	p
Between gorups	441.517	8	55.190		
Within groups	119944.934	277	433.014	0.127	0.998
Total	120386.451	285			

2.4. Development of Achievement Test

The Mathematics Lesson Curriculum was examined before creating the achievement test to be prepared on quadrilaterals (MoNE, 2018). In the curriculum, quadrilaterals are included in the Geometry and Measurement learning area under the sub-heading of polygons. The researcher conducted a literature review and created a question pool consisting of 60 questions. This question pool was reduced to 25 questions by taking the opinions of five experts, including a Turkish teacher, three mathematics teachers, and a faculty member from the primary school mathematics teaching department. The first question among these is the 2022 7th Grade Scholarship Exam question. The third question is the question that appeared in the 2010 7th Grade SBS Exam. Question 17 is a question in the 2008 7th Grade SBS Exam. The 8th question is the question in the 2007 7th Scholarship Exam. The other questions were inspired by the scholarship exam questions and prepared by the researcher in line with expert opinions, using 7th-grade mathematics textbooks.

The first version of the achievement test, consisting of 25 questions, was administered to 300 8th-grade students in the same school as 7th-grade students at the beginning of the 2022-2023 academic year. The reason why the first version of the achievement test was administered to 8th graders was that 7th graders had recently learned the quadrilaterals. Questions in the achievement test should be multiple choice. Those who answered each question correctly in the achievement test were given one point, and those who answered incorrectly or left blank were given zero points. In this way, both question-based and total scores of 300 students were calculated. Students are ranked from highest to lowest according to their scores. Since 27% of the number 300 is 81, 81 students with high scores formed the upper group, 81 students with low scores formed the lower group, and the item analysis method with lower and upper groups was performed.

Kuder Richardson-20 (KR-20) value was calculated to determine the internal consistency coefficient of the achievement test. The KR-20 value of 25 questions in the quadrilateral achievement test, which was piloted, was calculated as 0.915. After removing eight questions with a low item discrimination index, the KR-20 value of the remaining 17 questions was calculated as 0.928. When the KR-20 value is 0.80 or above, the measurements obtained in the test are reliable (Secolsky & Denison, 2018). As a result of the item analysis and KR-20 analysis, it was concluded that the quadrilateral achievement test is a test of very good discrimination, high reliability, and medium difficulty.

2.5. Process of Preparing a TEL Program

The results obtained from the researcher's professional experience and interviews with colleagues determined that students had difficulty in learning quadrilaterals (Gülbağcı, 2009). Based on this, the researcher investigated what could be done to enrich the learning environment regarding quadrilaterals, and the idea of using various technological tools in mathematics lessons gained importance. In this context, applications such as Geogebra, Desmos Geometry Tool, Storyboardthat, and Coogle have gained importance by taking expert opinions. From these applications; Geogebra was used for visualization and geometric drawing. Desmos Geometry Tool was used for visualization purposes. Storyboardthat was used for problem posing, classification and definition purposes. Coogle was used for mind-mapping purposes.

The planning phase for lessons and activities incorporating the aforementioned practices on quadrilaterals has commenced. During this process, the researcher consulted the opinions of five experts, three mathematics teachers, and one faculty member from the mathematics teaching department while developing the program. He crafted the lesson plan and activities based on expert insights and information gathered from a literature review. The plans and activities were prepared in alignment with the 7th-grade quadrilateral goals outlined in the "Mathematics Lesson Curriculum," and expert opinions were sought once again. Based on expert feedback, the importance of obtaining rapid feedback from students at the end of each achievement and swiftly addressing any learning deficiencies that might arise became evident. Consequently, it was decided to integrate the "Plickers" application into the lesson plans and activities, which facilitates quick feedback to students.

The researcher conducted the pilot study of the developed lesson plan and activities over approximately three weeks in January during the 2022-2023 academic year. Following the pilot study, it was determined that one key area needing improvement was introducing the features of the applications to the students. Another identified area for enhancement was the determination that it would be beneficial to show short videos on the topic at the beginning of the lesson to capture students' attention. These deficiencies were discussed with the experts, and in response to their feedback, the application features were introduced and incorporated into the first lesson plan. To address the other deficiency, "Khan Academy videos" were used to engage students and added to the lesson plan. A revised pilot study reflecting these adjustments was conducted, and no negative effects were observed. This updated pilot study commenced in another 7th-grade class during the last week of February and continued for 12 lesson hours (approximately three weeks).

2.6. Courses Conducted within the Scope of Research

The courses carried out within the scope of the research started to be implemented as of the last week of March in the second semester of the 2022-2023 academic year. The experimental and control groups started two different programs at the same time. Twelve-course hours (approximately three weeks) are allocated to both programs. The mathematics teachers who taught the experimental and control groups paid due attention to the objectives and lesson hours. Experimental and control groups started and finished their respective programs simultaneously. During this process, the researcher and the mathematics teachers who implemented the programs constantly communicated.

2.6.1. Lessons Conducted in Control Groups

The lessons in the control groups of Teachers Elif and Ayşe were carried out in the classroom environment for twelve lesson hours in accordance with the achievements in the Mathematics Lesson Curriculum. Activities are included to increase students' academic achievement. The activities were carried out with the students in the classroom environment. The lessons conducted in the control groups were conducted based on the mathematics textbook distributed to students by the Ministry of Education. In addition, the warnings about quadrilaterals in the Mathematics Curriculum were also considered. The researcher and practitioner teachers prepared lesson plans and activities to be applied to the control groups, paying attention to the outcomes and the mathematics textbook.

The lesson plan applied to the control groups is presented in detail in Appendix 4. When this plan was examined, previously prepared square, rectangle, rhombus, trapezoid, and parallelogram shapes were distributed to the students for the first learning outcome on 7th-grade quadrilaterals. Students examined the side, angle, and diagonal properties of these quadrilateral types with the help of a ruler and protractor and filled in the relevant table given in the activities. Then, the practitioner teachers explained what was necessary, and the students took notes. Additionally, sample questions regarding the relevant quadrilateral type have been solved. Each type of quadrilateral was examined separately, and an evaluation study was carried out at the end of the objectives. In the second objective process, activities were carried out to determine the area relations of rhombuses and trapezoids. Again, practitioner teachers provided the necessary explanations for field relations. Sample questions have been solved for this achievement. In the third objective, area problems related to quadrilaterals were solved.

2.6.2. Lessons Conducted in Experimental Groups

The lessons for the experimental group were conducted using a technology-enhanced learning environment program aligned with the Mathematics Lesson Curriculum focusing on quadrilaterals. The mathematical software mentioned in the previous section was installed on the interactive classroom whiteboards in this setting. Initially, students in the experimental groups were informed about the features of these mathematical tools and how to use them. Next, the different types of quadrilaterals in the first objective were discussed separately, and their angle, side, and diagonal properties were explored with active student participation using Desmos and GeoGebra. After completing the activities on the characteristics of quadrilateral types, the students created mind maps illustrating the relationships among quadrilaterals.

In the second objective, the area relationships of rhombuses and trapezoids were developed through mathematical software according to the lesson plans and activities prepared for the classroom environment. The third objective involved activities to calculate the area of quadrilaterals, following the lesson plan. Additionally, Khan Academy videos were occasionally used to engage students' attention at the beginning of the course.

At the end of the lesson, questions were posed using the Plickers application to evaluate the students. This application provided rapid feedback from all students, allowing for the quick identification and correction of any learning deficiencies. Furthermore, this application reinforced students' correct understanding.

2.7. Pre-Test, Post-Test, and Retention Test

Before the two mathematics teachers began working with one another and conducting their application with the experimental and control groups, the finalized achievement test was administered to assess whether there was a significant difference between the groups. The pre-test comprised 17 questions, with a maximum possible score of 100 points; the first 16 questions were worth 6 points each, while the final question was valued at 4 points. The pre-test, designed to meet the objectives of the quadrilateral subject, included 17 questions: 11 were related to the first learning outcome, 3 to the second, and 3 to the third. The emphasis on the first learning outcome stems from its comprehensive coverage of the characteristics of different quadrilateral types and their interrelationships. In the lesson plans prepared for the experimental and control groups, more class time was devoted to the first outcome than the other outcomes.

After the technology-enriched learning environment program was applied to the experimental groups and the current 7th-grade mathematics program was applied to the control groups, a post-test was applied to all groups. To prevent students from remembering the questions in the pre-test, the locations of some questions, the options of some questions, and the numerical values in some questions were changed. In the final test, the first 16 questions receive 6 points, and the last question receives 4 points. The highest score that can be obtained from the final test is 100 points. A retention test was applied to the experimental and control groups six weeks after the post-test. The retention test was prepared by changing the places of some questions in the final test and the options of some questions.

2.8. Data Collection Process

Before starting the research data collection process, equalization and achievement tests, daily plans, and activities for implementation were developed by taking expert opinions. Pilot studies of the developed tests and daily plans were carried out, and consulting experts made necessary adjustments again. Before the treatment, necessary permissions were obtained from both the university and the Provincial Directorate of National Education.

First, a pretest was applied to the experimental and control groups. Then, the current program was applied to the control groups, and the TEL program was applied to the experimental groups. Immediately after the relevant program was applied to the experimental and control groups, a post-test was applied

to the experimental and control groups. Six weeks after the last test, a retention test was applied to the experimental and control groups. The data collection process of this research is briefly shown in Table 5.

Table 5. Data collection process

Teacher	Group	Pre-test	Application	Post-test
Elif	Experiment	Equivalence test Pre-test	TEL program	Post-test Retention test
	Control	Equivalence test Pre-test	Current program	Post-test Retention test
Ayşe	Experiment	Equivalence test Pre-test	TEL program	Post-test Retention test
	Control	Equivalence test Pre-test	Current program	Post-test Retention test

2.9. Data Analysis

A statistical program was used to analyze the data. Descriptive statistics of the equalization, pre-test, post-test, and retention tests were calculated. Then, normality tests of them were run. First, ANOVA was conducted to determine whether the nine classes were equivalent to each other based on the data obtained from the equivalence test. After the equivalent classes were determined, random assignment was made to the experimental and control groups.

Pre-test, post-test, and retention tests were applied to the experimental and control groups, respectively, and normal distribution was satisfied. An independent samples t-test was conducted to reveal whether there was a significant mean difference between the pre-test, post-test and retention test of each teacher between the experimental and control groups. An independent samples t-test was conducted to reveal whether the pre, post, and retention test of the control and experimental groups of Elif and Ayşe, who were the research implementers, differed significantly for each teacher. First, an independent samples t-test was conducted to see whether there was a significant mean difference between the pre-test of the students in the experimental groups of Elif and Ayşe. However, since the variances of the groups were not equal, the Mann-Whitney U Test, which is the non-parametric equivalent of the independent samples t-test, was used only in this analysis. A paired samples t-test was run to determine whether there was a mean difference between the pre and post-test of the experimental and control groups. Similarly, a paired samples t-test was conducted to see whether there was a statistically significant mean difference between the experimental and control groups' post and retention test mean.

3. Results

Descriptive statistics and normality of pre, post, and retention test scores of Elif and Ayşe's experimental and control groups are given in Table 6. The kurtosis and skewness values of the pre, post, and retention test scores of the experimental and control groups of Elif and Ayşe were normally distributed since they were between +1.5 and -1.5 (Tabachnick & Fidell, 2015). The number of students in the experimental and control groups was n>30; the Kolmogorov-Smirnov test was run (Bursal, 2017; Cevahir, 2020). As given in Table 6, the pre, post, and retention test scores showed a normal distribution.

3.1. Experimental and Control Groups of Elif

Independent samples t-test results are shown in Table 7 to see whether there is a significant mean difference between the pre, post, and retention test scores of the students in the control and experimental groups of Elif about quadrilaterals. The variances of the pre-test ($p=0.783>0.05$), post-test ($p=0.055>0.05$), and retention test ($p=0.061>0.05$) groups are distributed homogeneously. There is no statistically significant difference between the pre-test mean scores of the students in the experimental and control groups of Elif. Although the pre-test mean scores of the experimental group were slightly higher than the control group, there was no significant mean difference ($t(62) = 0.148$, $p = 0.883>0.05$). Cohen's d value is widely used in effect size calculations for the independent groups t-test, in which the mean difference of two groups is compared, and the paired samples t-test, in which the means of two

measurements belonging to a group are compared (Özsoy & Özsoy, 2013). Cohen's d value is small, such as 0.20; values such as 0.50 are considered medium and values such as 0.80 are considered large effect sizes (Can, 2019; Cohen, 1988; Green & Salkind, 2005). The calculated effect value size (d = 0.037) showed that the mean difference in the pre-test scores of the experimental and control groups was very small. Elif's experimental and control group students' knowledge of quadrilaterals was close to each other before the treatment.

Table 6. Descriptive statistics results and normality of pre, post and retention test scores of experimental and control group of Elif and Ayşe

Teacher	Group-Test	N	$\bar{X}$	Median	sd	Skewness	Kurtosis	Kolmogorov-Smirnov Statistics	p
Elif	Experiment-pre	32	18.94	18	8.64	-0.54	0.11	0.133	0.162
	Experiment-post	32	56.19	53	21.6	-0.76	0.57	0.151	0.063
	Experiment-retention	32	55.44	52	21.31	-0.75	0.62	0.152	0.058
	Control- pre	32	18.63	18	8.25	-0.41	0.28	0.133	0.161
	Control- post	32	45.63	42	16.31	0.42	0.81	0.15	0.063
	Control-retention	32	38.88	36	15.82	-0.01	0.66	0.135	0.149
Ayşe	Experiment-pre	32	17.88	20	12.27	-1.27	-0.06	0.132	0.171
	Experiment-post	32	58.88	59	21.21	-0.88	0.40	0.134	0.154
	Experiment-retention	32	56.69	52	19.97	-1.06	0.54	0.144	0.9
	Control- pre	32	17.5	16	9.92	-0.27	0.42	0.148	0.073
	Control- Post	32	46	42	16.34	0.32	0.76	0.139	0.121
	Control-retention	32	39.31	36	16.43	1.22	0.97	0.142	0.98

Table 7. Independent samples t-test results regarding pre, post, and retention test scores of Elif's experimental and control group

Test	Group	$\bar{X}$	sd	Levene F	Levene p	t	p
Pre	Experiment	18.94	8.64	0.076	0.783	0.148	0.883
	Control	18.63	8.25				
Post	Experiment	56.19	21.6	3.816	0.055	2.207	0.031
	Control	45.63	16.31				
Retention	Experiment	55.44	21.31	3.635	0.061	3.53	0.001
	Control	38.88	15.82				

There is a statistically significant mean difference between the students' post and retention test scores in the experimental and control groups of Elif. The post-test mean score of the experimental group was higher than that of the control group, creating a significant mean difference in favor of the experimental group (t (62) = 2.207, p=0.031<0.05). The effect size value was calculated as d=0.551. The fact that the retention test mean scores of the experimental group were higher than those of the control group created a significant mean difference in favor of the experimental group (t (62) = 3.53; p=0.001<0.05). The calculated effect value size (d = 0.882) showed that the mean difference in retention test scores of the experimental and control groups was high. These results showed that Elif's technology-enriched learning environment program to the experimental group on quadrilaterals increased the students' academic achievement and contributed to their permanent learning.

A paired samples t-test is performed to determine whether there is a significant mean difference between the two repeated measurements of a group (Cevahir, 2020; Pallant, 2017). The assumptions of this test are the same as the independent samples t-test (Büyüköztürk, 2011). Table 6 shows Elif's pre-test, post-test, and retention test of the experimental and control groups show a normal distribution. Since the pretest and posttest scores and posttest and retention test scores of the experimental and control groups show normal distribution, the paired samples t-test results are shown in Table 8.

As given in Table 8, there is a statistically significant mean difference between the pre and post-test of the students in the experimental and control groups of Elif. The post-test mean of the experimental group was higher than the pre-test mean, creating a significant mean difference (t (31) = -13.582; p=0.000<0.05). The effect size (d = 2.264) was large. The post-test mean of the control group was higher than the pre-test mean, creating a significant difference (t (31) = -8.566; p=0.000<0.05). The

effect size was large (d= 2.089). Teaching the quadrilaterals by the TEL program increased the achievement of the experimental group in favor of the post-test. The achievement in the control group was also increased in the lessons conducted in the control group.

Table 8. Paired samples t-test results of Elif's pre test-post test and post test-retention test scores of the experimental and control group

Group	Test	$\bar{X}$	sd	t	df	p
Experiment	Pre	18.94	8.64	-13.582	31	0.000
	Post	56.19	21.6			
	Post	56.19	21.6	0.953	31	0.348
	Retention	55.44	21.31			
Control	Pre	18.63	8.25	-8.566	31	0.000
	Post	45.63	16.31			
	Post	45.63	16.31	1.926	31	0.063
	Retention	38.88	15.82			

There is no statistically significant mean difference between the posttest and retention test of the students in Elif's experimental and control groups. The fact that the post-test mean of the experimental group was higher than the retention test mean scores did not create a significant mean difference (t (31) = 0.953; p = 0.348>0.05). The effect size (d = 0.035) was very small. In the control group, the post-test mean was 6.75 points higher than the retention test mean, which did not create a significant mean difference (t (31) = 1.926; p=0.063>0.05). The effect size was small (d = 0.42). Since teaching quadrilaterals through the TEL program by Elif contributed to the meaningful learning of the students in the experimental group, there was no significant decrease in the retention test and the effect size was very small. The lessons conducted in the control group did not create a statistically significant difference in the retention test of Elif's control group.

3.2. Experimental and Control Groups of Ayşe

Pre, post, and retention test scores of the students in Ayşe's control and experimental groups showed a normal distribution. An independent samples t-test was conducted to see whether there was a significant mean difference between the pre, post, and retention test scores of the students in the control and experimental groups of Ayşe, as shown in Table 9.

Table 9. Independent samples t-test results of Ayşe's pre, post, and retention test scores of the experimental and control group

Test	Groups	$\bar{X}$	sd	Levene F	Levene p	t	df	p
Pre	Experimental	17.88	12.27	3.057	0.085	0.134	62	0.893
	Control	17.50	9.92					
Post	Experimental	58.88	21.21	2.409	0.126	2.72	62	0.008
	Control	46	16.34					
Retention	Experimental	56.69	19.97	3.043	0.086	3.801	62	0.000
	Control	39.31	16.43					

The variances of the pre (p=0.085>0.05), post (p=0.126>0.05), and retention (p=0.086>0.05) test groups are distributed homogeneously. There is no statistically significant difference between the pre-test mean of the students in the experimental and control groups of Ayşe. Although the pre-test mean of the experimental group was slightly higher than the control group, this did not create a significant mean difference (t (62) = 0.134, p=0.893>0.05). The effect size (d = 0.035) in the pre-test of the experimental and control groups was very small. This result showed that the knowledge of Ayşe's students in the experimental and control groups about quadrilaterals was close to each other before the treatment.

There is a statistically significant difference between Ayşe's post and retention test mean of the students in the experimental and control groups. The post-test mean of the experimental group was higher than that of the control group, creating a significant difference in favor of the experimental group (t (62) = 2.72; p=0.008<0.05). The effect size was calculated as d=0.68. The fact that the retention test mean of the experimental group was higher than that of the control group created a significant difference in favor of the experimental group (t (62) = 3.043, p=0.000<0.05). The effect size (d = 0.95) retention

test scores between the experimental and control groups were high. These results show that the technology-enriched learning environment program that Ayşe applied to the experimental group about quadrilaterals increased the students' academic achievement and contributed to their permanent learning. Since the experimental group's pre-post and post-retention test scores showed normal distribution, paired-sample t-test results are shown in Table 10.

Table 10. Paired samples t-test results of Ayşe's pre test-post test and post test-retention test of the experimental and control group

Groups	Test	$\bar{X}$	sd	t	df	p
Experimental	Pre	17.88	12.27	-10.146	31	0.000
	Post	58.88	21.21			
	Post	58.88	21.21	1.135	31	0.265
	Retention	56.69	19.97			
Control	Pre	17.5	9.92	-8.082	31	0.000
	Post	46	164			
	Post	46	16.34	1.901	31	0.67
	Retention	39.31	16.43			

Table 10 shows a statistically significant mean difference between the pre and post-test of the experimental and control groups of Ayşe. The post-test mean of the experimental group was higher than the pre-test means, creating a significant mean difference (t (31) = -10.146; p=0.000<0.05)). The effect size (d = 2.266) was large. The post-test mean of the control group was higher than the pre-test mean, creating a significant difference (t (31) = -8.082; p=0.000<0.05). The effect size was large (d= 2.108). Teaching quadrilaterals, carried out by the TEL program, increased the achievement of the experimental group in favor of the post-test. The achievement in the control group was also increased in the lessons conducted in the control group.

There is no statistically significant mean difference between the posttest and retention test of the students in Ayşe's experimental and control groups. The fact that the post-test mean of the experimental group was higher than the retention test mean did not create a significant mean difference (t (31) = 1.135; p=0.265>0.05). The effect size (d = 0.109) was very small. In the control group, the post-test mean was 6.69 points higher than the retention test mean, which did not create a significant mean difference (t (31) = 1.901; p=0.67>0.05). The effect size was small (d = 0.408). Since teaching quadrilaterals through the TEL program by Ayşe contributed to the meaningful learning of the students in the experimental group, there was no significant decrease in the retention test and the effect size was very small. The lessons conducted in the control group did not create a statistically significant difference in the retention test of Ayşe's control group.

3.3. Comparison of Elif and Ayşe's Experimental and Control Groups

The control and experimental groups of Elif and Ayşe were compared. In this context, "Is there a statistically significant mean difference between pre, post, and retention test scores of students in the control and experimental groups of Elif and Ayşe regarding quadrilaterals?". The independent samples t-test results are shown in Table 11.

Table 11. Independent samples t-test results regarding pre-test, post-test and retention-test scores of Elif and Ayşe's control group

Test	Teacher	$\bar{X}$	sd	Levene F	Levene p	t	df	p
Pre	Elif	18.63	8.25	0.936	0.337	0.493	62	0.623
	Ayşe	17.50	9.92					
Post	Elif	45.63	16.31	0.001	0.975	-0.092	62	0.927
	Ayşe	46	16.34					
Retention	Elif	38.88	15.82	0.002	0.962	-0.109	62	0.914
	Ayşe	39.31	16.43					

The variances of Elif and Ayşe's pre (p=0.337>0.05), post (p=0.975>0.05), and retention scores (p=0.962>0.05) of the control groups are distributed homogeneously. There is no statistically significant mean difference between the pre and post-test mean scores of the students in the control groups of Elif and Ayşe. Although the pre-test mean scores of Elif's control group were slightly higher than those of

Ayşe's control group, there is no significant difference (t (62) = 0.493; p=0.623>0.05). The posttest mean scores of Ayşe's control group are slightly higher than those of Elif's control group. But this did not create a statistically significant difference (t (62) = -0.092; p=0.927>0.05). The effect size was d = 0.124 in the pre-test and d = 0.022 in the post-test. The effect size in the control groups of Elif and Ayşe showed that these differences were very small. The knowledge of Elif and Ayşe's students in the control group on quadrilaterals before and after the treatment was close to each other.

There is no statistically significant difference between the retention test mean scores of the students in the control groups of Elif and Ayşe. Although the retention test mean scores of Ayşe's control group were slightly higher than Elif's control group, this did not create a statistically significant mean difference (t (62) = -0.109; p=0.914>0.05). The effect size (d = 0.026) was very small. In the retention test applied after six weeks, the retention of knowledge about quadrilaterals of the students in the control groups with two teachers did not differ significantly.

As given in Table 6, the students' pre-test scores in the experimental groups of Elif and Ayşe showed a normal distribution. An independent samples t-test was conducted to see whether there was a significant mean difference between the students' pre-test scores in the Elif and Ayşe experimental groups. However, since the variances of the groups were not distributed homogeneously (p=0.013<0.05), the Mann-Whitney U Test, which is the non-parametric equivalent of the independent samples t-test, was used to determine whether there was a significant mean difference between groups in cases where one of the assumptions of the independent samples t-test is not met (Bursal, 2017; Cevahir, 2020). The results of the Mann-Whitney U Test are shown in Table 12.

Table 12. Mann Whitney U test on pre-test scores of Elif and Ayşe's experimental group

Test	Teacher	N	Mean Rank	U	p
Pre	Elif	32	33.19	490	0.766
	Ayşe	32	31.81		

There is no statistically significant difference between the pre-test mean of the students in the experimental groups of Elif and Ayşe. Although the mean rank of pre-test scores of Elif's control group was slightly higher than that of Ayşe's experimental group, this did not create a significant difference (p=0.766>0.05). The effect value size (d=0.1) was small. This result showed that the knowledge of Elif and Ayşe's students in the experimental group on quadrilaterals was close to each other before the treatment. To see whether there is a significant mean difference between the post and retention test of the students in the experimental groups of Elif and Ayşe, independent samples t-test results are shown in Table 13.

Table 13. Independent samples t-test results regarding the post-test and retention test of Elif and Ayşe's experimental group

				Levene				
Test	Teacher	$\bar{X}$	sd	F	p	t	df	p
Post	Elif	56,19	21,60	0,106	0,746	-0,502	62	0,617
	Ayşe	58,88	21,21					
Retention	Elif	55,44	21,31	0,037	0,848	-0,242	62	0,809
	Ayşe	56,69	19,97					

The variances of the post-test (p=0.746>0.05) and retention test (p=0.848>0.05) according to the teachers are distributed homogeneously. No statistically significant mean difference exists between the students' post and retention test in the Elif and Ayşe experimental groups. Ayşe's post-test mean (t (62) = -0.502; p=0.617) and retention test ($t_{(62)}$ = -0.242; p= 0.809) mean of Elif's experimental group. It is slightly higher than the experimental group. However, this did not create a statistically significant mean difference. Effect size values were as d = 0.126 in the post-test and d = 0.061 in the retention test. The effect sizes in Elif and Ayşe's experimental groups were very small. Elif and Ayşe applied a TEL program to the experimental groups. After the treatment, knowledge about quadrilaterals acquired by the students in the experimental groups with both teachers did not differ at a statistically significant level. In the retention test applied after six weeks, the retention of the knowledge about quadrilaterals acquired by the students in the experimental groups with both teachers did not differ significantly.

3.4. The Effect of TEL Program on The Learning of Quadrilaterals

ANCOVA was used to examine whether there was a significant difference between the post-test when the pre-test was controlled between the experiment in which the TEL program was applied and the control groups in which the current program was applied. Two assumptions of ANCOVA, homogeneity of variances and homogeneity of regression, were examined (Karagöz, 2017). Firstly, the homogeneity of variances of Ayşe and Elif's experimental and control groups is $F_{Ayşe}(1,62)=2.028$, $p=0.16>0.05$, and $F_{Elif}(1,62)=0.111$, $p=0.740>0.05$ was ensured. When the regression homogeneity assumption is examined in Table 14, Ayşe's control and experimental group $F_{Ayşe}(1) = 0.912$, $p=0.343 > 0.05$, the homogeneity of the regression is ensured. Thus, both assumptions of ANCOVA were met (Karagöz, 2017). $F(1)= 17.870$, $p=0.000<0.05$ in Elif's control group and experimental group, the homogeneity of the regression was not ensured. ANCOVA is a powerful analysis method, and when the number of students in the groups is low, the assumption of homogeneity of the regression can be considered as satisfied (Tabachnick & Fidell, 2015).

Table 14. ANCOVA assumption for Ayşe and Elif's groups (dependent variable: post-test)

Teacher	Source	Tip III Sum of Squares	df	Mean Squares	F	p
Ayşe	Corrected Model	3048,241[a]	3	1016,080	2,792	,048
	Intercept	45954,253	1	45954,253	126,274	,000
	Group	123,784	1	123,784	,340	,562
	Pre-test	16,139	1	16,139	,044	,834
	Gorup * Pre test	331,813	1	331,813	,912	,343
	Error	21835,509	60	363,925		
	Total	200864,000	64			
	Corrected Total	24883,750	63			
	a. R^2= ,122 (Adjusted R^2 = ,079)					
Elif	Corrected Model	11201,594[a]	3	3733,865	16,842	,000
	Intercept	9873,292	1	9873,292	44,535	,000
	Group	1684,396	1	1684,396	7,598	,008
	Pre-test	5022,121	1	5022,121	22,653	,000
	Gorup * Pre test	3961,717	1	3961,717	17,870	,000
	Error	13301,843	60	221,697		
	Total	190356,000	64			
	Corrected Total	24503,438	63			
	a. R^2= ,457 (Adjusted R^2 = ,430)					

Table 15. ANCOVA of Ayşe and Elif's groups

Teacher	Source	Tip III Sum of Squares	df	Mean Squares	F	p	Eta square
Ayşe	Corrected Model	2716.428a	2	1358.214	3.738	029	.109
	intercept	45967.034	1	45967.034	126.492	000	.675
	Group	64.178	1	64.178	.177	676	.003
	Pre-test	2637.405	1	2637.405	7.258	009	.106
	Group * Pre-test	22167.322	61	363.399			
	Error	200864.000	64				
	Total	24883.750	63				
	a. R^2 = .109 (Adjusted R^2 = .08)						
Elif	Corrected Model	7239.877	2	3619.939	12.791	.000	.295
	intercept	9455.419	1	9455.419	33.410	.000	.354
	Group	5454.815	1	5454.815	19.274	.000	.240
	Pre-test	1669.053	1	1669.053	5.898	.018	.088
	Group * Pre-test	17263.560	61	283.009			
	Error	190356.000	64				
	Total	24503.438	63				
	a. R^2 = .295 (Adjusted R^2 = .272)						

As given in Table 15, the mean difference between the post-test (pre-test corrected) means is statistically significant, as $p_{Ayşe}=0.009<0.05$ and $p_{Elif}=0.018<0.05$. The TEL program applied by Ayşe and Elif to the experimental group made a difference in the learning of the 7th-grade quadrilaterals and affected the students' achievements in quadrilaterals. Since the p-value of the pre-test of the

quadrilateral achievement test is p = 0.000<0.05, the effect of the quadrilateral achievement pre-test on the quadrilateral achievement post-test is significant. The impact value is 23%.

4. Conclusion, Discussion and Recommendations

The teaching prepared to determine the effect of the TEL on learning the quadrilaterals was evaluated based on pre-test, post-test, and retention tests. Two different practitioner teachers researched one experimental and control group. The findings regarding the experimental and control groups of both practitioners followed a parallel course and did not create a significant difference. For this reason, the findings obtained in the applications are discussed together based on the literature.

The first result is that the means of the experimental and control groups of both practicing teachers did not differ based on their pre-tests. On the other hand, the experimental and control groups' post-test and retention-test means differed significantly in favor of the experimental group. This indicates that TEL of seventh-grade quadrilaterals positively and significantly affects achievement. Similarly, the experimental groups were more successful than the control group (Sarı, 2021).

Another result was that the pre-post averages of both experimental groups of practicing teachers differed significantly in favor of the post-test. There was no significant mean difference between the post and retention tests of the experimental groups. This situation was interpreted as the applied teaching positively affecting learning retention. Similarly, Geogebra-supported mathematics courses positively affect achievement and knowledge retention (Sevgi & Soylu, 2022). Moreover, the pre and post-test means of both control groups of practicing teachers differed significantly in favor of the post-test. This indicates that traditional teaching on quadrilaterals also has a positive effect. The mean difference between students' pre-test and post-test scores is an expected result, generally observed in the literature and indicates that new learning has occurred (Çilingir & Artut, 2016; Usta et al., 2018). In addition, no significant mean difference was detected between the post and retention tests of the control groups.

The fact that the mean scores of the experimental groups in the post-test were significantly different from the mean scores of the control groups is likely due to the advantages of the technology-enriched learning environment in the teaching process. These results demonstrate that technology-enriched teaching effectively teaches abstract mathematical concepts such as quadrilaterals, the properties of quadrilateral types, and area. Technology-enriched teaching allowed seventh-grade students to classify quadrilaterals, understand the relationships between them and grasp the properties of quadrilaterals. In this way, teaching helped students comprehend quadrilateral types and the area concept more concretely. The fact that these research results align with studies such as Altın (2012), Cengiz (2017), Dikovic (2009), Öner (2013), and Sarıaslan and Küçük-Demir (2020) contributes to the relevant literature on the effectiveness of technology-enriched teaching.

The mean retention test scores of the experimental groups significantly differ from those of the control groups. The finding of a significant difference favoring the experimental groups indicates that TEL activities help students retain the information they have learned more permanently compared to the current seventh-grade curriculum. This situation suggests that TEL positively impacts the understanding and learning of quadrilateral concepts and the retention of the applied teaching methods. Studies in the literature indicate that TEL is effective in enhancing the permanence of the information students acquire. Notable examples include Topuz (2017) on circles; Genç (2010) on polygons and quadrilaterals; Vasquez (2015) on transformation geometry; Acar (2015) on exponential and logarithmic functions; and Öz (2015) on geometric objects, all reaching similar conclusions about TEL's role in increasing student achievement and knowledge retention.

To evaluate the impact of practitioner teachers on practice, the means of the experimental groups of various practitioners and the control groups of different practitioners were compared. The teacher factor significantly affects students' achievement (Yenilmez & Duman, 2008). Research on teachers' use of technology in teaching identifies factors such as technology perception, self-confidence, planning, physical conditions, teaching plans, application, and the ability to use materials, which are also influential

(Kaleli-Yılmaz, 2015). In this study, the means of pre-tests, post-tests, and retention tests for the control groups comprising different practitioners did not demonstrate significant differences. Similarly, the pre-test, post-test, and retention test means of the experimental groups composed of various practitioners were compared, revealing no significant mean differences. Therefore, no differentiation arose from practitioners.

Math teachers can use interactive math software such as Geogebra and Desmos in their classes to help students explore quadrilaterals. They can increase student motivation by organizing in-class competitions and online games. They can help students better connect to topics by presenting math problems in a story format with applications such as Storyboardthat. They can appeal to different learning styles by sharing educational videos and interactive e-books about quadrilaterals. They can help students visually organize mathematical concepts and relationships with applications like Coogle and make complex topics more understandable. They can give students instant feedback with online quizzes and interactive applications such as Plickers. These suggestions show that technology-enriched learning environments can effectively increase students' academic achievement and learning retention on quadrilaterals.

In conclusion, the effects of a curriculum based on the TEL on the achievement and retention of students at different grade levels or in different mathematics subjects can be examined. Students' affective perceptions, such as motivation and anxiety, and student opinions can be added to similar research. Similar research can be conducted using the mixed research method.

The mathematics curriculum prepared following the TEL increases the achievement of seventh-grade students about quadrilaterals and ensures permanent learning. In this context, classroom environments should be enriched in terms of technology. It is recommended that necessary studies be carried out to enrich digital content and introduce this content to teachers and students.

Statement of Researchers

Researchers' contribution rate statement:
Both authors contributed equally to all chapters.

Conflict statement:
The authors declare that they have no conflict of interest.

Data Availability Statement:
The data supporting this study's findings are available from the corresponding author upon reasonable request.

Funding:
1) Erciyes University Scientific Research Projects Unit supported this study with the project code SDK-2024-13237.
2) This study was supported by TUBITAK 2211-A General Domestic PhD Scholarship Program.

Ethical Considerations: This research was approved by the Erciyes University Ethics Committee's Social and Human Sciences Ethics Committee's decision, No. 448, dated 25/10/2022.

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ANADOLU UNIVERSITY

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Anadolu University Journal of Education Faculty

aujef.anadolu.edu.tr

2025, 9(1), 24-43
Print ISSN: 1300-5448
Online ISSN: 2602-2249

RESEARCH ARTICLE OPEN ACCESS

Examination of the ethical positions of philosophy group teachers and their perception of metaphors related to the concept of ethics*[3]

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[3] This study was prepared from the master's thesis with the same title, prepared by the first author under the supervision of the second author.
* This research was approved by the Çukurova University Ethics Committee's Social and Human Sciences Ethics Committee's decision, No. 7, dated 11/03/2021.

Article Info
DOI: 10.34056/aujef.1507619
Article History:
Received: 30/06/2024
Revised: 26/12/2024
Accepted: 12/02/2025
Keywords
Ethics,
Metaphor perception,
Personal ethics ideologies,
Professional ethics,
Philosophy group teachers.

Highlights:

- It was found that the idealism dimension of the participants was higher than the relativism dimension of the participants.
- That the most commonly used metaphor element by philosophy teachers is the concept of "human".
- It is seen that they consider the concept of ethics as the most guiding and vital element.

Abstract
The Ethical Concept has been a topic that has not lost its relevance throughout history. That is why it is an indispensable subject of research. The teachers of the philosophy group have a conceptual substructure regarding the concept of ethics. This substructure forms the ideology and perceptions of the philosophical group of teachers regarding the concept of ethics. Many studies have been conducted on ethics, including those of teachers, directors, and students. In literature, however, there is no study of a philosophical group to ensure that the concept of ethics is the subject of teaching. Based on the reasons stated, this study aims to examine the metaphorical perceptions of ethical status levels and the concept of ethics by the teachers of the philosophy group. The study was carried out using the parallel method of synchronization, with 107 philosophical group teachers working in the central districts of Adana, Çukurova, Sarıçam, Seyhan and Yüreğir in the educational year 2020-2021. Sample selection based on maximum diversity was made to determine participants. The study used the personal information form as a tool for data collection, the Ethics Position Questionnaire developed by Forsyth (1980), and the metaphor for the ethical concept developed by researchers. Quantitative data were analyzed using the SPSS 22 program. Qualitative data is dealt with together with metaphors and reasoning by means of content analysis. In the subsequent process, the qualitative and quantitative data sources were analyzed first separately and then jointly, and the analysis found that the demographic structure had no impact on ethical position levels, and that the sub-dimension of idealism was high on the ethical state levels of the participants compared to the relativistic sub-dimension. Participants produced a total of 68 different metaphors. The most widely used metaphor by the teachers of the philosophy group has been identified as the concept of "human". In addition, they consider the concept of ethics to be the most guiding and vital element.

Citation: Göktaş, D, & Aybek, B. (2025). Examination of the ethical positions of philosophy group teachers and their perception of metaphors related to the concept of ethics. *Anadolu University Journal of Education Faculty*, *9*(1), 24-43. https://doi.org/10.34056/aujef.1507619

1. Introduction

Nowadays, every society is facing rapid change. This is a change in the relationship between individuals, the relationship of individuals with the state, and the relation of individuals to society. Ethics and ethics have become attractive in this exchange. So, why is ethics important? Ethics is an internal force that governs people's behavior, thoughts, and emotions. It's even effective from some rules, even from laws. The existence of an ethical concept enables individuals to develop a sense of trust in other people and society. It allows individuals to live in peace. So Russell (2017) described ethics as an effort to find peace. In another definition, ethics is the relationship between the value problems that a person with a particular integrity has experienced with people with a certain integrity such as himself (Kuçuradi, 2018). Finally, Mahmutoğlu (2009) states that ethics is concerned with the level of consciousness of human actions. Consequently, the concept of ethics is all the written principles inspired by the common sense of society, beliefs, and values that guide the relationship of an individual with other persons, institutions, other living species, and even inanimate beings.

The absence of "ethical function" in society forces individuals to defend their interests. Individuals are more aggressive and selfish. Other individuals continue to behave in the same way to protect their interests. After all, there's a chaotic atmosphere. Chaos is becoming more and more distant from ethical rules. Ethics is part of everyday life. It's even an important part of it. According to Türkeri (2019), anyone who uses his mind in everyday life and is faced with some difficult situations should be seen as an ethical philosopher in a way. The trouble he's talking about here is questions about how to behave. Those who discuss issues of ethics are not just people with an academic background. Because there may be circumstances in which each individual needs to show an ethical stance or an ethical judgment, in the light of all this knowledge, being ethical is almost the same as being social.

The concept of ethics has many applications. This can be illustrated by medical ethics and scientific ethics. However, none of the areas of application has the same relationship as education. Because ethics is an auditor in other fields, and education is different. So, education can be a subject of ethics, while ethics can be the subject of education.

The relationship between education and ethics is mandatory. Because the desire to cultivate ethical behavior is one of the basic purposes of education. According to Pieper (2012), human nature is not a moral entity. But he argues that man should be educated and educated morally. Society expects individuals to be "not good" or "do the right thing". It aims to this expectation through education. In the early stages, the aim of education is the desire for the ideal.

Ethics education comes with concepts such as "human education", "character education" and "value education". According to Plato, the primary purpose of education is to make people virtuous. Virtue is acquired through labor and work. According to Aristotle, education or upbringing is achieved by making virtue a habit in children. He argues that true knowledge is only virtue (Küken, 2003). According to Plato and Aristotle, the main purpose of education is to raise virtuous individuals. According to Kant, the purpose of raising individuals is to make people human (Pieper, 2012). What makes a person human is to create his/her own moral framework. According to these views, raising virtuous or moral individuals should be the main purpose of education. Another idea is that moral education is presented as a supporting feature. Hayness (2020) states that moral behavior is as important as knowledge. For knowledge to gain value, it should be embellished with ethical values. Ibn Haldun states that morality is relative and spiritual, but individuals can acquire moral characteristics through indoctrination and imitation (as cited in Küken, 2001).

The relationship between education and ethics is not limited to purposes, content, or methods. The education system must be an ethical system that develops in itself. This enables education to be more systematic and orderly, while students and teachers comply with established standards. With this size, education becomes the subject of ethics.

The ethical dimension of education concerns the relationship between teacher, student, and manager. Teachers have rules and ethical values that must be adhered to in their schools according to their profession. Students also have rules and responsibilities to follow in school. Students' attitudes,

perceptions, or ideologies about ethical concepts affect their likelihood of adhering to the rules. In addition, Gardelli, Alerby, and Persson (2014) stated that the school institution is responsible for teaching students moral values and directing them to correct behavior. In this process, the attitudes of adults towards the concept of ethics are typically modeled as influencing the behavior of students. The concept of ethics is abstract. In his mind, conceptually, during his formation, he is associating with other abstract and concrete concepts. In this case, research into the ethical perception and attitude to the concept of ethics should look at the mental structure of individuals. The most appropriate method for this study is metaphor analysis.

In recent years, metaphor has been expressed as a powerful mental structure that an individual can use to understand or explain a very abstract, complex, and theoretical phenomenon. According to Balcı (2003), a metaphor is a phenomenon that enables us to move from a known state or concept to an unknown state or concept and move from these parallels to bring the unknowns to a known situation. Metaphors are an element that helps people express their environment, and their life, not in how they can perceive it, but in how they can observe it (Cerit, 2008).

A metaphor defines an individual's phenomena or concepts, based on their experiences, at the end of a mental process. In other words, concepts can be defined as the process of being able to use beyond the meaning capacity it can possess. Metaphors are included in the teaching process. The metaphor is used not only in the teaching process but also in the measurement and evaluation phase. He can give the teacher clues about what the individual has learned, and how because each person adapts new learning to their own mental structure by interpreting it. In the measurement and evaluation phase, metaphors can identify students' missing or misleading learning and ensure necessary corrections are made.

The metaphor is used as a data collection tool in the research process. Because metaphors allow us to see the inside of a situation, event, or concept (Kılcan, 2017). A metaphor reveals different dimensions of a situation. It can also be regarded as the most effective and intelligent way of communicating the findings. It offers an advantage in data collection, especially in qualitative research. The other part of this study is the identification of personal ethical ideologies. In addition to individuals' perceptions and attitudes toward ethical concepts, personal ethical ideologies also influence ethical attitudes. A personal ethical system can be called the moral view that an individual develops or how they behave according to that view (Güler, 2017). Personal ethics is studied in terms of ideology and idealism. Ethical ideologies influence the moral decision-making process of individuals. Individuals with a tendency to relativity adopt a moral judgment that rejects universal and absolute moral rules. They also think that moral rules exist in a contextual context as a function of time, place, and culture (Yazıcı & Yazıcı, 2010). Forsyth (1980) examined ethical ideologies in categories based on the relationship between idealism and relativism. Yazıcı and Yazıcı (2010) summarized the ethical position approach categories in “Table 1”.

Table 1. Table of ethical situation approaches

Ideology	Dimensions	Ethical Judgment Approach
The Situations	High relativism High idealism	They reject the existence of moral rules; they look at the best possible outcome of action in a given situation.
The Subjectivists	High relativism Low idealism	They deny the existence of moral rules; they base ethical judgments on actions and feelings about the environment.
The Absolutists	Low relativism High idealism	They assume or feel that they are moral when actions result in a positive outcome by adhering to ethical rules.
The Exceptionists	Low relativism Low idealism	Moral rules are desirable, but they often feel that exceptions are acceptable.

The ethical ideologies that individuals have in their ethical and moral decision-making processes are effective. The relationship of personal ethical ideologies with sub-dimensions of idealism and pragmatism is presented in “Figure 1”.

Moral acquisitions are related to sociality (Timuçin, 2014). An individual should have an awareness of moral behavior. This situation requires the student to adapt to his/her own society as well as an ethical awareness of the society in which he/she is expected to be formed. According to Demir and Köse (2016), students are expected to learn the values of society while adapting to society. They add that teachers

are important role models in learning these values. Moreover, the student model that society needs is expected to be given by teachers who are well-trained and have a high quality of education (Karaboğa, 2019). In addition, the concept of ethics will inevitably become a central discipline of philosophy, and so it has been. Whether in philosophical practice in the pre-modern period or the most radical periods of modernity, ethics has occupied the central position of philosophical endeavor (Uluç, 2015). For this reason, ethics will always continue to be a current area of discussion.

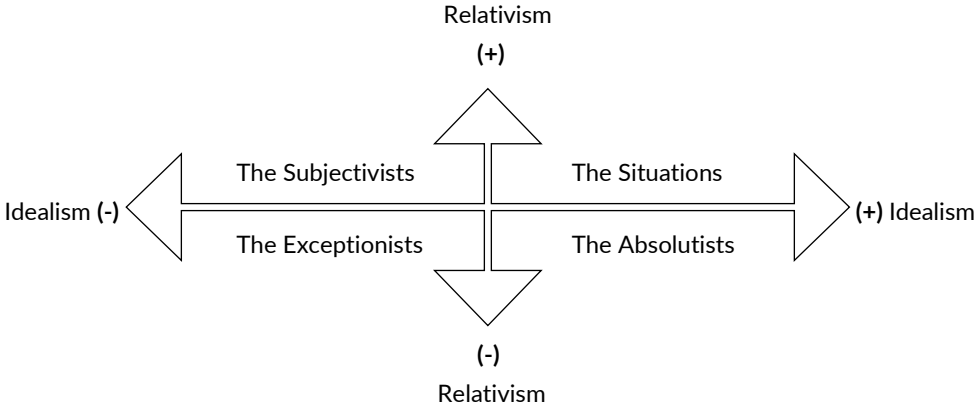

Figure 1. Relationship scheme of personal ethical ideologies

Based on all this information, education on ethics for students is of great importance. That is why many studies have been carried out covering the concepts of education and ethics. teachers, managers, and students participated in these surveys. It is also seen that different research methods are used in these researches as well as different research techniques. For example, Çokan (2006) conducted a study on teachers' perceptions of teaching ethics and measures they take against problematic behaviour in the classroom. The study concluded that female teachers are more likely than male teachers to face strategies that are not consistent with teaching ethics. In his study, Şakar (2010) surveyed the ethical views of class teachers. The study found that teachers had no knowledge of the concept of ethics, expressed it as a moral concept, and could not distinguish between the two concepts. Another result is that teachers do not know professional ethics codes.

Altınkurt and Yılmaz (2011) conducted a study on unethical behavior among candidates for teachers in the teaching profession. The professional ethics sensitivity of teachers enrolled in the educational faculty is high compared to those enrolling in the pedagogical formation certificate program, who have graduated from the faculty of science and literature. Aybek and Karataş (2016) conducted a study on teacher candidates on ethics and professional ethics. The study concluded that candidates associate ethics with morality in general and that ethics is seen as a personal attribute. In a similar, Karataş, Caner and Kâhyaoğlu (2019) conducted a study on ethical teaching and professional ethics based on the views of candidates for teachers. According to the participants, the teachers' ethical attributes were determined. In his 2018 study, he investigated the professional ethics perceptions of teachers of the X, Y and Z generations. The study found no difference between the professional ethics perceptions of X and Y generation teachers. However, the professional ethics perception of teachers with professional experience ranging from one to four years was found to be higher than that of professors with more than four years of professional experience.

Many metaphorical studies have been carried out on the concept of value that forms the basis of the ethical concept. These studies have been directed at candidates for teachers and teachers (Gündüz, Saygılı & Sulak, 2014; Aladağ & Kuzgun, 2015; Aydın & Surak, 2015; Çelikkaya & Seyhan, 2017; Demirkaya & Çal, 2018). In a study by Keskin, Yıldız and Aksakal (2019) on medical students' metaphor perceptions of ethical concepts, it was revealed that medical students had sufficient conceptual knowledge about ethics. Keskin, Aksakal and Yücetürk (2020) conducted a study with candidate's teachers on the metaphor analysis of the concept of ethics. The vast majority of the teaching candidates who participated in the study were identified as having an ethical awareness. The ethical attitudes and perceptions of individuals vary according to their personal ethical ideologies. Personal ethical position is

defined as the feelings, thoughts, and general moral understanding that individuals have when assessing moral issues (Forsyth, 1980). Personal ethical ideologies are examined in four groups based on the sub-dimensional levels of idealism and pragmatism. These are the absolute, the conditional, the exceptional, and the subjective. These personal ethical ideologies guide how individuals should behave in ethical dilemmas. Literature has shown that there are variables that affect the ethical perception of individuals. Ağyar, Angay Kutluk and Cengiz (2012) conducted a study to identify factors affecting the ethical perception of accounting students. According to the data obtained, variables such as gender, age, place of birth, property management unit status (state, county, etc.) of the students, educational level of the parent, perceived socio-economic level, and income level of households, have shown statistically significant differences in the level of ethical perception. Based on this reasoning, these variables have been investigated in ethical ideologies. Toprakçı, Bozpolat and Buldur (2010) found a significant relationship between seniority, socio-economic level and compliance with ethical rules in their study with teachers. According to them, as the socio-economic level increases, the rate of compliance with ethical principles also increases. Çevikbaş (2006) stated that socio-economic conditions affect unethical behavior such as bribery. Additionally, the Ministry of Industry and Technology of the Republic of Türkiye (2022) published a report ranking the development of districts in Türkiye based on criteria such as socio-economic status, health, education, and population. In this ranking, it has been observed that Seyhan district, one of the central districts of Adana, is in 42nd place, Çukurova district is in 76th place, Sarıçam is in 149th place, and Yüreğir is in 203rd place. Accordingly, it is observed that there are socio-economic differences in the central districts of Adana. For this reason, it has been deemed appropriate to include district information as an independent variable in the research.

When all these studies are examined, it is seen that the studies are related to students, administrators, and teachers in different branches. The perceptions of these participants about the concept of ethics are social teachings or cursory. There is no study on the ethical perception of philosophy group teachers, who require a deep knowledge of ethics and have the concept of ethics in the content of their courses. However, philosophy group teachers are trained in the theories and movements related to the concept of ethics. All teachers working in higher education institutions, starting with pre-school education, teach individuals about ethical concepts, such as ethical behaviour, in the learning process. But this education and teaching is limited to the secret program. Gülcan (2014) stated that ethical education in the Turkish education system starts with the family, but its dimension at school is insufficient and when it is passed to higher education, it is only in departments such as philosophy, psychology, and business administration. The philosophy group's teachers, too, are changing. Because the concept of ethics is part of the teaching content of education. In other words, the concept of ethics is treated as an object of learning. Gülcan (2014) also argues that schools should teach students the right behavior and different moral perspectives. In short, the teachers of the philosophy group are more responsible for the concept of ethics. Narvaez (2006) stated that teachers need to provide moral coaching for students to develop good character. From this point on, the aim of this study is to identify the metaphorical perceptions of the ethical position levels of the philosophy group teachers and the concept of ethics.

The problem of this research was determined as "What are the ethical position levels of philosophy group teachers and their metaphor perceptions about the concept of ethics?". In line with the problem of the research, answers to the following questions were sought:

1. What is the ethical position of the teachers of the philosophy group?

2. Do the ethical position of the philosophy group teachers vary according to gender, the department they graduate, the district in which they work, their educational status, age, and duration of experience?

3. What metaphors do the philosophical group teachers use to express their perceptions of the concept of ethics?

4. Under what conceptual categories are the metaphors collected in terms of similar properties?

5. Are the ethical position levels of the philosophy group teachers changing according to the metaphors they use?

2. Method

This study was conducted in the research of the compound method. Because the most striking reason why mixed method research is necessary is that events and phenomena around us are complex and multidimensional (Yıldırım & Şimşek, 2018). This research was carried out using the parallel mapping method. The objective of the nearby parallel compression method model is to obtain quantitative scores depending on the detailed qualitative information and measurement tool about the participants' perspective (Creswell, 2017). This work was carried out in the second half of the 2020-2021 academic year with the voluntary participation of teachers of the philosophy group, who served in secondary educational institutions (high schools) in central districts including Çukurova, Sarıçam, Seyhan and Yüreğir, Adana Province. Sample selection based on maximum variation was made to determine participants because this sampling method is intended to determine what kinds of similarities or differences exist in cases showing diversity (Yıldırım & Şimşek, 2018). The study included a total of 107 philosophical groups of teachers, including 25 from Çukurova District, 23 from Sarıçam District, 19 from Seyhan District, and 40 from Yüreğir District. The necessary permission and approval for the research was obtained in writing from the Adana Provincial National Directorate of Education. General information on participants in the study is presented in "Table 2".

Table 2. General information table for participants

Title	Title	N	%
Gender	Female	58	54.2%
	Male	49	45.8%
Total		107	100%
Graduate Section	Philosophy department/ Philosophy group teaching	65	60.7%
	Sociology department	42	39.3%
Total		107	100%
Working District	Çukurova	25	23.4%
	Sarıçam	23	21.5%
	Seyhan	19	17.8%
	Yüreğir	40	37.4%
Total		107	100%
Educational Status	Bachelor's degree	75	70.1%
	Master's degree	32	29.9%
Total		107	100%
Age	20-30 years	15	14.0%
	31-40 years	26	24.3%
	41-50 years	51	47.7%
	Over 50 years	15	14.0%
Total		107	100%
Professional Experience Period	Below 10 years	22	20.6%
	11-15 years	21	19.6%
	16-20 years	16	15.0%
	21-25 years	34	31.8%
	Over 25 years	14	13.1%
Total		107	100%

2.1. Data Collection Tools

At the same time, the participants were given a personal information form, an Ethics Position Questionnaire, and a structured metaphor form. The data obtained with the personal information form and the Ethics Scale were assessed as quantitative data. The metaphor data obtained in the form of the structured metaphor is considered as qualitative data.

2.1.1. Quantitative Data Collection Tools

The study provided participants with a personal information form and a quantitative data collection tool called the Ethics Position Questionnaire (EPQ). The first section of the personal information form briefly describes the researcher and the study. This form contains a personal information section to gather details about the participants' gender, the department from which they graduated, the district where they have worked, their educational status, age, profession, and the duration of their professional experience. The Ethics Position Questionnaire (EPQ), developed by Forsyth in 1980 and adapted to Turkish by Yazıcı and Yazıcı in 2010, assesses the ethical position levels of the participants. The EPQ consists of 20 items in a 5-point Likert scale, measuring the sub-dimensions of idealism with 10 items and relativism with 10 items.

The scale's reliability and validity study by Yazıcı and Yazıcı (2010) resulted in Cronbach's Alpha reliability of .90 (high reliability). For this study, the Cronbach Alpha reliability coefficient was 0.76. The data obtained shows that the Ethics Position Questionnaire is highly reliable, according to Büyüköztürk, Çokluk and Köklü (2013).

2.1.2. Qualitative Data Collection Tools

A structured metaphor form was applied to participants as a qualitative data collection tool. This form consists of two main sections. In the first section, a text containing information on variables is presented with general information for participants. In addition, a brief description of the metaphor is given and an example is given later in the chapter. In the second part of this form, the teachers of the philosophy group were asked to complete the phrase "ethics..." and explain the reasons for the comparisons, to identify the metaphors created for the notion of ethics. The metaphors and logical foundations produced have been used as the primary data source for this research. During the research's data collection process, a structured interview form and Ethics Position Questionnaire were simultaneously applied to the participants, who were philosophy group teachers who participated on a voluntary basis. Participants completed the data collection tools in 30-40 minutes.

2.2. Data Analysis

In this part of the study, the content analysis method was employed to process the data gathered from participants. The primary purpose of this method is to uncover concepts and relationships that can explain the collected data. The goal is to determine what is present in the study data analysis. Content analysis has been utilized to reveal the existing situation. This technique seeks to make the raw data obtained from the research comprehensible and usable. The data is organized, summarized, and interpreted within specific themes to achieve this. Direct quotations from those interviewed or observed are often included to provide strong evidence for these conclusions (Yıldırım & Şimşek, 2018). The qualitative data gathered in this study have been categorized into specific themes and categories with solutions based on the quantitative data of the research. 89 different productions were collected from 107 participants involved in the study. However, 68 different productions from 86 participants regarding ethics were considered metaphorical. The 21 different productions from the remaining 21 participants were not seen as metaphors because the items used are meaningfully and directly related to the concepts of morality and ethics and, therefore, do not fit the definition of metaphor. The metaphors accepted from participants were analyzed as qualitative data. For this purpose, metaphors have been categorized primarily as living beings, inanimate beings, and beings in nature. Because the categorization is based on a similar-similar relationship classification in Çeliksoy's (2019) study.

The findings obtained from the Ethics Position Questionnaire (EPQ), the quantitative measurement tool, were analyzed using the SPSS (Statistical Package for the Social Sciences) program 22.0. The ethical Position levels of the participants were determined according to the criteria set by Yazıcı and Yazıcı (2010) in their study. The analysis of the findings obtained in this study was calculated by determining the frequency, percentage, average, and standard deviation values, which are defining statistics.

Table 3. Normality analysis results table

Dimensions	Skewness	Kurtosis	K-S	p
Idealism	-1.65	1.24	0.29	0.01*
Relativism	1.99	0.03	0.34	0.01*

*Significant difference at 0.05 level

According to the findings in "Table 3", it is seen that all variables have a normal distribution. Normal tests were used because the skewness and kurtosis of the dimensions determined in the study vary between -1 and 1, the number of samples in the study was n=107 and the Kolmogrov-Simirnov test result showed normality (p>0.05). According to Kline (2011), the distribution of the findings is normal if the skewness coefficients of the questions in the questionnaire are between (-1.5) and (+1.5) and the kurtosis coefficients are between (-10) and (+10).

An analysis of the Mann-Whitney U test was carried out to evaluate the scores of idealism and relativism by gender, division, education, and ethical definition levels. The study used the Kruskall-Wallis test to examine the participants' scores of idealism and relativism based on their place of work, professional experience, and age information. A Mann-Whitney U test was performed to identify different groups. Spearman describes the linear relationship between the two variables measured using sequential points (Büyüköztürk et al., 2013). In this study, applying the Spearman's correlation was considered appropriate to convert the sub-dimensional variables of idealism and relativity into sequential points. To study the relationship between idealism and the sub-dimensions of relativism, the "Spearman correlation" and the "Wilcoxon Signed Rank Test" analysis of the differences between the dimensions of idealism and proportionalities have been carried out. In the study. P values less than .05 are considered meaningful. The study was analyzed using the SPSS (Statistical Package for the Social Sciences) 22.0 package.

The metaphors gathered from the participants were examined as qualitative data. For this purpose, metaphors were primarily categorized into living beings, inanimate objects, and elements of nature. This categorization was based on the relationship classifications outlined in Çeliksoy's (2019) study. Subsequently, the metaphors were analyzed both conceptually and qualitatively. During this metaphor conceptual analysis, the subject, source, and reasons for creating each metaphor were explored, leading to further categorization. To achieve this, the metaphors used by the participants were analyzed using content analysis. Lastly, the study explored whether there was a significant difference between the metaphors participants used and their explanations for those metaphors. As a result of the analysis, metaphors were classified into distinct categories.

During the qualitative data analysis process, it was found that some concepts fell into both categories. In such instances, the meaning of the participant's explanation was carefully examined. For example, participant K8 used the metaphor of a "roof" to describe ethics. The "roof" metaphor mentioned by the participant can be viewed as a unifying and a protective element. In this case, K8's metaphor was revisited for further examination. The participant described the "roof" metaphor as "a roof protects a house against storms, wind, heat, and cold, ensuring that the house remains intact." The meaning highlighted by the participant here emphasizes protection. Therefore, the "roof" metaphor prioritizes the protective element category.

3. Findings

3.1. First and Second Research Questions Related Findings

The first underlying objective of the study is to determine the ethical position of the philosophy group's teachers. For this purpose, findings on the idealism and relativism sub-dimensions of the Ethics Scale are presented in "Table 4".

Table 4. Table of findings on the sub-dimensions of idealism and relativism of the ethics position questionnaire.

Dimensions	N	X̄	s.s.	p
Idealism	107	4.21	0.32	0.01*
Relativism	107	3.02	0.63	

*0.05 significant difference in level

According to the findings in "Table 4", the average score of the participants for the sub-dimension of idealism was X=4.21±0.32. The average score for the relative sub-size of the participants was X=3.02±0.63. When these two findings were examined, the scores of the relativism and idealism dimensions, which are sub-dimensions of the scale of ethical perception, differed significantly. Based on these findings, the study showed that the participants had higher levels of idealism than their levels of relativism (p=0.01).

Table 5. Table of changes in idealism and relativity sub-dimensions according to participant characteristics

Participant Properties		Idealism			Relativism		
		X̄	s.s.	p	X̄	s.s.	p
Gender	Male	4.27	0.32	0.08	3.17	0.69	0.03*
	Female	4.16	0.31		2.9	0.56	
Graduate Section	Philosophy department/ Philosophy group teaching	4.22	0.35	0.80	3.02	0.65	0.94
	Sociology department	4.2	0.29		3.03	0.61	
Working District	Çukurova	4.24	0.29	0.55	2.94	0.67	0.59
	Sarıçam	4.13	0.31		3.02	0.63	
	Seyhan	4.26	0.31		3.04	0.47	
	Yüreğir	4.23	0.35		3.06	0.7	
Educational Position	Bachelor's degree	4.23	0.27	0.33	2.99	0.68	0.48
	Master's degree	4.17	0.41		3.09	0.52	
Age	20-30 years	4.13	0.22	0.07	2.93	0.66	0.64
	31-40 years	4.25	0.33		2.92	0.65	
	41-50 years	4.17	0.34		3.07	0.64	
	Over 50 Years	4.39	0.27		3.12	0.6	
Professional Experience Period	Below 10 years	4.07	0.33	0.14	3.04	0.71	0.92
	11-15 years	4.24	0.37		3.01	0.66	
	16-20 years	4.24	0.28		2.89	0.75	
	21-25 years	4.24	0.32		3.07	0.61	
	Over 26 years	4.33	0.26		3.03	0.41	

*0.05 significant difference in level

When examined in "Table 5", the average male sub-score of idealism was X=4.27±0.32 and the average sub-score of relativism was X=3.17±0.069. The female participants had an average score of X=4.16±0.31 for idealism and an average point for relativism of X=2.9±0.56. The gender of the participants was not significantly different from the level of idealism (p=0.08). The gender of the participants has been shown to make a significant difference in the level of relativism. The difference was found to be attributable to the higher probability levels of male participants compared to female participants (p=0.03).

As shown in "Table 5", the participants who graduated from the philosophy/philosophical group teaching had an average sub-dimensional score of idealism X=4.22±0.32 and an average proportional sub-dimension score of X=3.02±0.65. Participants who graduated from the Department of Sociology had an average score of X=4.2±0.29 for idealism and X=3.03±0.61. Participants who had graduated from the philosophy/philosophical group teaching or sociology were found to have similar levels of idealism and relativism (p>0.05), while those who did not significantly differentiate by idealism or relativism levels according to the departments where the participants graduated.

According to the findings in "Table 5", the average score of sub-dimensional idealism was X=4.24±0.29 for Çukurova district; X=4.13±0.31 for Sarıçam district, X=4.26±0.031 for Seyhan district and X=4.13±031 for Yüreğir district. According to the districts the participants studied, there was no significant differentiation in the level of idealism. The study found that participants in the districts of Çukurova, Seyhan, Sarıçam and Yüreğir had similar levels of idealism (p=0.55).

When examining "Table 5", the average scores of proportional sub-size were X=2.94±0.67 for Çukurova district; X=3.02±0.63 for Sarıçam district, X=3.04±0.47 for Seyhan district and X=3.06±0.7 for Yüreğir district according to the districts the participants studied. According to the districts in which the participants studied, there was no significant differentiation in the level of responsibility. The study found that participants in the districts of Çukurova, Seyhan, Sarıçam, and Yüreğir had similar levels of priority (p=0.59).

Based on the findings in "Table 5", the average score for sub-dimensional idealism was X=4.23±0.27 for undergraduates and X=4.17±0.41 for graduates, depending on the educational status of the participants. Participants' educational status was not significantly differentiated from the level of idealism, and participants with undergraduate and graduate education in the study had similar idealism levels (p=0.33).

When examined in "Table 5", the average score for the proportional undersize was X=2.99±0.68 for undergraduates and X=3.09±0.52 for postgraduate graduates, based on the educational status of the participants. Participants' educational status was not significantly differentiated by the level of relevance, and participants with undergraduate and graduate education in the study had similar levels (p=0.48).

As shown in "Table 5", the average sub-score of idealism, based on the age status of the participants, was X=4.13±0.22 for the 20-30-year-olds; X=4.25±0.33 for the 31-40-years-old; X=4.17±0.34 for the 41-50-early; and X=4.39±0.27 for the 51 and older. The age of the participants was not significantly differentiated by the dimension of idealism, and the study found that the participants between the ages of 20-30, 31-40, 41-50, and 51 years of age and older had similar idealism levels (p=0.07).

Based on the findings given in "Table 5", the average relative sub-size scores of participants were X=2.93±0.66 for the 20-30-year-old range; X=2.92±0.65 for the 31-40-years-old interval; X=3.07±0.64 for the 41-50-age range; and X=3.12±0.6 for the 51 years of age and above. The age of the participants was not significantly differentiated by the level of relativism; the study found that participants aged 20-30 years, 31-40 years, 41-50 years, 51 years of age, and older had similar levels (p=0.64).

When examined in "Table 5", the average subscale idealism scores of the participants are X=4.07±0.33 for 10 years and less; X=4.24±0.37 for ages 11-15, X=4.25±0.32 for ages 16-20, for and above, X=4.33±0.26. The participants' experience periods were not significantly differentiated from the level of idealism. The study found that participants with less than 10 years of professional experience, 11-15 years, 16-20 years, 21-25 years, and 26 years and older had similar levels of idealism (p=0.14).

Based on "Table 5" findings, the relative bottom-size average score for the ethical position of the participants was X=3.04±0.71 for 10 years and less; X=3.01±0.66 for 11-15 years; X=2.89±0.75 for 16-20 years; X=3.07±0.61 for 21-25 years and X=3.03±0.41 for 26 years and above. It was not found that the participants' experience periods differed significantly in relativism. The study found that participants with less than 10 years of professional experience, 11-15 years, 16-20 years, 21-25 years, and 26 years and older had similar levels of relevance (p=0.92).

3.2. Third Research Question Related Findings

The second underlying objective of the study is to determine what metaphors the philosophy group teachers use to express their perceptions of the concept of ethics. The study included 68 production metaphors produced by 86 participants. Furthermore, 21 participants were not rated as 21 production metaphors because the products used are meaningfully directly related to the concepts of morality and ethics.

3.3. Fourth Research Question Related Findings

The third sub-objective of the study is to determine under what conceptual categories the metaphors for the ethical concept created by the philosophical group of teachers are assembled in terms of similar characteristics. To this end, metaphors are first categorized conceptually and then qualitatively.

When the metaphors used by the participants were studied conceptually, it was considered appropriate to group them into six main categories. These categories are referred to as the guiding element, vital element, unifying element, protective element, balancing element, and systemic element. Findings for these categories are given in "Table 6".

Table 6. A table of categories made up of metaphors

Categories	f	%
Guide Element	23	26.74
The Vital Element	20	23.26
Unifying Element	17	19.77
Protective Element	12	13.95
Balancing Element	9	10.47
Systemic Element	5	5.81
Total	86	100.0

In the metaphorical categories for ethical concepts, when examined in "Table 6", the guide element was found to be the most specified with 26.74% and the vital element with 23.26%. It is followed by a unifying element of 19.77%, a protective element of 13.95%, and a balancing element of 10.47%. The least used metaphor category identified by participants was the systemic element, with 5.81%.

Guide Element: This category includes the metaphors that the participants have created by centralizing the ethical concept and the guiding function. The metaphors studied in the category of guidance elements are: constitution, mirror, light, pencil, pulse, map, worker's joke, our own light, the polar star, leader, court, note, prophet, circus mirrors, traffic lights, mother, the mirror of society, and executive

Examples of the metaphor and explanation some of the participants discussed in the guiding element category are presented below.

K6 "Ethics is like a leader. Because it guides you. If you're ethical in life, it'll make your job easier and you'll be fine. If you don't like it, you can't get rid of the negatives. Your business is largely not going well."

K11 "Ethics is like light. Because the light that emerges in a dark environment directs what, how, what we're going to do. People turn to the light in order to act in this context, and "me" becomes "we"".

The Vital Element: In this category, the participants metaphorically viewed ethics as an indispensable element of life, or as non-existent without it. In other words, they are metaphors that argue that ethics must necessarily be in life. But not every metaphor examined in the category of vital elements directly affects life. For example, the water metaphor is a very vital concept. But metaphors like money indirectly emphasize vitality. The metaphors studied in the category of vital elements are air, water, breath, money, medicine, air-water, soil, clear water, rainwater, salt, ocean with fish, and man.

The following are examples of the metaphors and descriptions used by the participants in this category.

K27 “Ethics is like water. Because just as water is essential for human survival, will, character, and attitude really make us human, make us individuals. Being an individual is a moral condition. It's also ethical. Morality separates man from other beings. A person must have a character, a moral attitude.”

K49 “Ethics is like breath. Because people cannot live without breath, they cannot live in societies without ethics. Ethics is therefore indispensable.”

Unifying Elements: This category includes the metaphors that the participants have created by centralizing their ethical concept and their unifying function. The metaphors studied in the category of the unifying element are trees, love, garden, yard, dam, heap, sky, rope, carpet, carp, civilisation, mosaic, tree roots, bridge, alloy, and cement.

Some examples of this category are presented below.

K3 “Ethics is like the roots of a tree. Because, first of all, the family is the primary source of moral values and ethics, of ethical understanding. Ethics is taught in a family, adopted. The foundation of ethics is laid in the family. The stronger the roots of ethical values, the more solid the structure of society.”

K21 “Ethics is like cement. Because the better the cement of a building, the stronger it is. Ethics also holds society together.”

Protective Element: This category focuses on the metaphors that the participants have created, focusing on the concept of ethics, society, and the function of protecting the individual. The metaphors studied in the category of protective/healing elements have been identified as sea, building wall, building foundation, refrigerator, roof, flower, house, mother, mask, construction foundation, and psychiatrist.

Some examples under the category of protective/healing elements are presented below.

K4 “Ethics is like the foundation of construction. Because just as an unfounded building collapses, a society or people without ethical concepts and rules cannot stand.”

K12 “Ethics is like a mask. Because, according to the circumstances, people hide their true values when they want to wear an approved, acceptable mask, or if it's "universal" for the "good," "bad" individual.”

Balancing Element: This category includes the metaphors that the participants have created by focusing on the ethical concept, the balance function of society. The metaphors studied in the category of balancing elements have been identified as the terrace, the slope, a steep rock, a straight line, the honor (namus), the ship, the unfolding bar, and the line between day and night.

Some examples under the category of balancing and regulating elements are presented below.

K35 “Ethics is like discharge. Because one side shows good, the other side shows bad and harm, and the lower one, the higher the other. Ethics is the same as evil, and the lower the damage, the more the other side gains momentum for benefit, the same thing applies to the principle of good and good, the lower it is, the less the damage prevails.”

K10 “Ethics is like a steep rock. Because a steep rock is not easily broken down. Human conditions with ethical principles, no matter what, are not as easily broken down as a steep rock. People who do not possess ethical principles are scattered in all directions like leaves from a simple wind, and they don't know what to do.”

Systemic Element: This category includes metaphors that participants view as part of the system or part of change. The metaphors studied in the category of systemic elements have been identified as motor, river, seasonal, mechanical and tourist.

The following are examples of the metaphors and descriptions used by the participants in this category.

K9 “Ethics is like a river. Because when the river gets polluted, it's not just the fish, but those who pollute it, they get polluted day after day, and sooner or later they're hurting themselves. That's why, like the rivers, the meat must always be clean so it doesn't get polluted.”

K30 “Ethics is like the teeth of a machine. Because if we think of the main components of the machine as institutions that serve society, such as education, health, and security, ethics is what ensures that these components work properly. When machines don't work, then, over time, there are divisions in society, chaos, and corruption begins a process of extinction.”

Unacceptable Products as Metaphors: Under this heading, there are productions presented by the participants, which are not considered a metaphor. Because these productions are directly related to the concepts of ethics and morality. Productions that are not metaphorically accepted are the distinction between good and evil, fairness, character, human rights and morals, sharing, justice, transformation, personality, principle, morality, the moral, conscience, honesty, fittings, moral values, the right person, balance, order, responsibility, the way of bringing society into line, and the way to live.

Productions and descriptions not accepted as metaphors are presented in the following examples.

K47 "Ethics is like being the right person. Because it's being able to distinguish right from wrong by understanding the notion of morality."

K57 "Ethics is like fisting. For there is no change in God's creation."

K70 "Ethics is like character. Because it's the practice of thinking about people's values."

K77 "Ethics is like being fair. Because we have to demonstrate the right behavior, both socially and individually."

In this section, the metaphors created by the participants are grouped into living inanimate beings, abstract concrete beings, natural elements, and non-natural elements. The definition of the participants' ethical metaphor is presented in "Table 7".

When metaphorical evaluations of the ethical concept presented in "Table 7" were examined, it was found that 12.1 percent of participants described it as a living entity and 87.9 percent as an inanimate entity. 68.2 percent of the ethical definitions made were based on abstract concepts and 31.8 percent on concrete concepts. In addition, 23.4% of the participants in their ethical comparisons found that they attributed assets and elements to nature. In contrast, 76.6 percent of the participants were found not to belong to the resources and elements found in nature.

Table 7. Description table of the ethical metaphor of the participants

Description		f	%
Living Entity- Inanimate Entity	Living	13	12.1%
	Inanimate	94	87.9%
Concrete- Abstract	Concrete	73	68.2%
	Abstract	34	31.8%
Similarity to Nature	Yes	25	23.4%
	No	82	76.6%

The metaphor examples presented by the participants included concepts such as a person, a tree, a flower, a fish, a leader, a governor, and a prophet. The non-living entities used in the metaphors created by the participants can be given examples of concepts such as pen, sea, light, mirror, thrill, and house. Other examples of abstract concepts include fairness, morality, balance, love, righteousness, transformation, honesty, principle, character, and personality. Examples of concrete concepts presented in metaphors include trees, pencils, lights, dams, gardens, carpets, maps, and puzzles. Examples of things studied as elements of nature include trees, flowers, gardens, sea, air, and water.

3.4. Fifth Research Question Related Findings

The fourth sub-objective of the study is to determine whether the teachers of the philosophy group show a meaningful difference in ethical position levels from the metaphors they use. It was attempted to determine whether there was a meaningful differentiation between the structural categories of the metaphors used by the participants and the sub-dimensions of idealism and relativism. The structural categories of metaphors are defined as living-less, tangible-sound, and the use of elements in nature. The findings obtained are presented in "Table 8".

Table 8. A metaphor evaluation table of the ethical state of affairs and the concept of ethics.

	Idealism	Relativism

		X̄	s.s.	p	X̄	s.s.	p
Living entity- Inanimate entity	Living	4.36	0.48	0.03*	3.19	0.69	0.04*
	Inanimate	4.11	0.3		2.96	0.63	
Concrete- Abstract	Concrete	4.32	0.34	0.01*	3.02	0.65	0.58
	Abstract	4.08	0.28		3.01	0.61	
Similarity to Nature	Yes	4.10	0.31	0.04*	2.88	0.61	0.04*
	No	4.28	0.32		3.19	0.63	

*0.05 significant difference in level

When examining “Table 8”, it was found that the participants' vivid and inanimate metaphors about the concept of ethics differed in the degree of idealism. Participants using living being metaphors on the ethical concept have been found to have higher levels of idealism than those using inanimate being metaphors (p=0.03).

Live and inanimate metaphors of the participants about the ethical concept were identified as differentiated in relativism. Participants using living-entity metaphors on the ethical concept have been found to have higher levels of relativity than those using inanimate-entities metaphors (p=0.04).

The participants' abstract and concrete metaphors about the ethical concept were identified as differentiating in the dimension of idealism. Participants who used abstract being metaphors on the ethical concept found higher levels of idealism than those who used the concrete being metaphors (p=0.01).

The participants' abstract and concrete metaphors about the ethical concept found no differentiation in relativism. In addition, the participants' assessments of the abstract and concrete metaphor of the ethical concept showed similar levels of relative perception (p=0.58).

The metaphors of the participants' similarity to nature about the ethical concept were identified as differentiating in the dimension of idealism. Participants who used metaphors for ethical concepts were found to have lower levels of idealism than those who used non-metaphors (p=0.04).

It was found that the metaphors of the ethical concepts of the participants were differentiated in relativism. Participants who used metaphors for ethical concepts were found to have lower levels of relativity than those who used non-metaphors (p=0.04).

4. Discussion and Result

The first sub-objective of the study is to determine the ethical position of the philosophy group teachers. To this end, the ethical position of the philosophy group's teachers was assessed based on variables such as gender, age, length of professional experience, county where they worked, department where they graduated, and educational status. The results obtained in this context are presented below.

The findings obtained from this study of the ethical position of the teachers of the philosophy group showed that the average score for the sub-dimension of idealism was X̄=4.21±0.31; the average point for the relative sub-dimensional was X̄=3.2±0.061. In this case, the average score of the sub-dimensional idealism of the participants is higher than that of the median score of sub-dimensional idealism. Compared to previously established scores, Forsyth's (1992) classification suggests that the philosophy group teachers have adopted an "absolute" approach. In a study with students and teachers working with mental disabilities, Akdemir (2016) found that the average score for sub-dimensions of idealism was X̄=4.10±0.46 and the mean score for subsimensions X̄=3.43±0.68. When the findings were compared, the two studies had similar results in the sub-dimensions of idealism and relativism.

The average score of sub-sized idealism by gender was found to be similar. The average under-size score of female participants was also found to be lower than that of male participants. Akdemir (2016) found similar results in a study with students with mental disabilities and teachers working with them. Based on Forsyth's (1992) classification, it was determined that the male participants were “situational” and the female participants were “absolute”. In other words, it can be said that male

participants set the moral rules according to the "best outcome" principle. Women's participants are said to have adopted more ethical rules.

When findings on the ethical position levels and age distribution of participants were examined, the sub-dimensions of idealism and relativism were found to be at a similar level. In addition, the relationship between the participants' periods of professional experience and average scores of idealism and sub-dimensions of relativism supports this outcome. In this case, approaches to the ethical decision-making process are unchanged according to age and experience. The sub-dimensions of idealism and priority remained unchanged depending on the district where the participants studied, the department where they graduated, and their educational status. In addition, no other evidence has been found in the literature regarding their age, experience, and ethical status in the region in which they work.

The second under-objective of the study was to determine how the teachers of the philosophy group defined the ethical concept by what metaphors. The metaphors studied for this purpose and the results obtained according to the purpose of creation are as follows: In this study, 107 participants produced a total of 89 concepts. When the concepts produced were analyzed, they were considered a metaphor for the 68 concepts of production ethics that 86 participants formed. The 21 concepts produced by the other 21 participants were not considered a metaphor for the concept of ethics. A total of 68 metaphors developed by the participants and considered to be ethical concepts were studied in a total of 6 categories, including guiding elements, vital elements, unifying elements, preservative/healing elements, balancing elements, and systemic variable elements.

The study examined findings on the metaphors of philosophy group teachers on the ethical concept and found that the most indicative element category was used at a rate of 26.74% compared to other metaphor categories. In other studies, (Keskin Yıldız & Aksakal, 2019; Keskin, Aksakal & Yücetürk, 2020) this metaphor category has been dealt with in the category of “ethics as an element of social order”. In these studies, supportive, order-making metaphors have been discussed jointly under the category of “ethics as the element of social order”. Keskin, Yıldız and Aksakal's (2019) study showed a ratio of 24.26% for the category “ethical as a social ordering element” while Keskin and Aksakal and Yücetürk's (2020) study found that the ratio was 42.57% for ethics as a community ordering factor. According to this conclusion, the philosophy group's teachers focused on the guiding function of ethics while defining the ethics concept. According to the teachers of the philosophy group, the concept of ethics guides society and the individual in moral behavior.

This study dealt with the most recent category of “systemic and change elements”, with a usage rate of 5.81 percent. In a (2019) study by Keskin, Yıldız, and Aksakal, this category was rated under the "ethical as a changing and evolving element" category, with a use rate of 16.10% for this category. A study by Keskin, Aksakal, and Yücetürk (2020) found that the category of “ethics as a changing and evolving element” was used at a rate of 11.67%. This shows that the teachers of the philosophy group have a lower rate of viewing the ethical concept as a variable and a system element than other fields. It could also be said that the participants did not see the concept of ethics as an element of the system.

Another important finding in this study is the lack of metaphors for the ethical concepts produced by 21 participants. Because the products used are meaningfully directly related to the concepts of morality and ethics. This is not compatible with the concept of metaphor. This indicates that 21 participants have insufficient knowledge about creating metaphors, in other words, they do not fully understand the concept of metaphor.

As a result of this research, it can be said that the philosophy group teachers view the concept of ethics as a leading, uniting, and regulating element of society.

When the metaphors of the ethical concept were examined according to the classification of living and inanimate beings, it was found that the rate of use of non-living beings was high. When metaphors relating to ethical concepts are examined according to the classification of concrete concepts and abstract concepts, the rate of abstract concept use appears to be high. When metaphors of ethical concepts are examined from the point of view of inclusion in nature, it appears that participants use elements that are not found in nature in a high proportion. Finally, when evaluating the metaphors, the

participants used for the ethical concept, it was found that they described it as an inanimate being, an abstract concept, and an unnatural element. No such categories have been created in previous metaphor studies on the concept of ethics.

The third and fourth sub-objectives of the study are to determine whether there is a meaningful difference between the ethical position levels used by the philosophy group teachers. To this end, the metaphors used by the participants regarding ethical position levels and the concept of ethics were jointly analyzed. The results of this analysis are as follows:

According to the findings obtained, the metaphors they created about the ethical concept show that the participants who used living beings had a high sub-dimension of idealism and a low dimension of relativism. According to Fostyh's (1992) classification, participants described as static associated the concept of ethics with a living being.

In their metaphors of the ethical concept, the participants who used an inanimate being were shown to have a higher sub-dimension of idealism and a lower dimension of relativism. According to Fostyh's (1992) classification, participants using inanimate entities were rated as absolute.

The sub-dimensions of the idealism of participants who used an abstract definition of the ethical concept were found to be higher than those who used a tangible definition. Participants using abstract and concrete metaphors for ethical concepts also found no differences in relativism. These findings suggest that the sub-dimensions of relativism of the participants analyzing abstract and tangible entities are at similar levels. According to Fostyh's (1992) classification, participants using abstract and concrete concepts can be described as "situational".

When metaphors of the participants' ethical concepts examined the rate of use of elements in nature and the ethical state of affairs, it appeared that the participants who used natural elements had a higher sub-dimension of idealism and a lower dimension of relativism. In other words, according to Fostyh's (1992) classification, participants who were defined as absolute used natural elements in their metaphors of ethical concepts. The sub-dimensions of idealism and relativism in non-natural participants appear to be at high levels. According to Fostyh's (1992) classification, metaphors of the ethical concept of participants who were described as static determined that they did not use natural elements. There has been no other study in the literature on this part of this study.

The results of this study are based on the following proposals:

1. According to the Forsyth (1992) classification, female participants were more attached to ethical rules when compared to (absolute) male participants (situational). Accordingly, content or practices can be provided to male participants to adopt more ethical rules.

2. The results show that the teachers of the philosophy group lack knowledge of the concept of metaphor. It is suggested that the metaphor should be used in literature scans, both in philosophy courses and in other courses of education-teaching principles. Thus, in undergraduate studies, philosophy group candidates, and in-service courses and seminars, teachers can be trained in metaphor.

3. The study found that the philosophy group's teachers associated metaphors of ethical concepts with unnatural elements. However, available sources (Russell, 2017; Gül & Gökçe, 2008) indicate that the concept of ethics is compulsory and natural. In order to overcome this contradiction, lecturers can conduct seminars and panels during their undergraduate training for philosophical group teachers to adopt the need for the concept of ethics in courses such as the theory of social change.

4. Given the importance of the concept of ethics, regardless of the results of research, teachers in all other fields and all sections of society need to receive ethical training. Non-governmental organizations working to raise awareness of the concept of ethics can participate in ethics-related work. So a social ethical awareness can be created.

Suggestions for Future Research

A study can be conducted with philosophy group teachers across the country using the Ethical Situation Scale and metaphor analysis. In this way, more data can be obtained as it provides the opportunity to generalize with the obtained data.

Studies can be conducted to determine the ethical situation levels and metaphors related to the concept of ethics of teachers of different branches other than philosophy group teaching. In this way, it can be determined whether there is a difference between the participants who have field knowledge about the concept of ethics and the other participants. Dec. It can be discussed whether the data obtained contributes to ethics education.

A study can be conducted for philosophy group teachers with ethical situation levels and possible ethical dilemma scenarios. Strict interpretations can be made about the concept of ethics, but it may be more helpful to deal with concrete situations with scenarios.

Teachers who serve on the school disciplinary board have to make many decisions during the school work and functioning. For this reason, a study can be conducted to determine the current ethical position levels of teachers serving on the school disciplinary board. Thus, data related to the field of application of the concept of ethics can be obtained.

In-depth qualitative research can be conducted to determine the factors affecting the sub-dimensions of idealism and relativity in ethical approaches. A lot of research can be done about this. For example, the effects of socioeconomic factors can be investigated with a longitudinal study. Another research example is that by giving scenarios, it can be determined in which cases idealism and in which cases the relativistic sub-dimension predominates.

Statement of Researchers

Researchers' contribution rate statement:
Duygu Göktaş: Conceptualization, methodology, software, investigation, validation, writing- original draft preparation, writing - review & editing, data curation. **Birsel Aybek**: Writing-original draft preparation, validation, formal analysis.
Conflict statement:
The authors declare that they have no conflict of interest.
Data Availability Statement:
The data supporting this study's findings are available from the corresponding author upon reasonable request.
Funding:
This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.
Ethical Considerations: The Çukurova University Ethics Committee's Social and Human Sciences Ethics Committee's decision, No. 7, approved this research, dated 11/03/2021.
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ANADOLU UNIVERSITY

AUJEF

Anadolu University Journal of Education Faculty

aujef.anadolu.edu.tr

2025, 9(1), 44-56

Print ISSN: 1300-5448

Online ISSN: 2602-2249

RESEARCH ARTICLE OPEN ACCESS

The association between mindfulness in marriage and marital adjustment: The mediating role of marital problem solving*

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* This research was approved by the Izmir Democracy University Ethics Committee's Social and Human Sciences Ethics Committee's decision, No. 60, dated 06/08/2021.

Article Info

DOI: 10.34056/aujef.1504746

Article History:

Received: 25/06/2024

Revised: 02/10/2024

Accepted: 12/02/2025

Keywords

Marriage,
Mindfulness in marriage,
Marital problem solving,
Marital adjustment.

Highlights:

- Mindfulness in marriage and marital adjustment are positively correlated.
- Mindfulness in marriage and marital problem-solving show a positive correlation.
- Marital problem-solving and marital adjustment are positively correlated.
- Marital problem-solving mediates the relationship between mindfulness in marriage and marital adjustment

Abstract

This research examines the mediating role of marital problem-solving in the relationship between mindfulness in marriage and marital adjustment in married individuals. The study participants consisted of 422 individuals who have been married for at least one year, reside in various regions of Turkey, and voluntarily agreed to participate in the research. While collecting the data for the research, the Personal Information Form, Mindfulness in Marriage Scale, Marital Adjustment Scale, and Problem Solving in Marriage Scale were used. While analyzing the research findings, bootstrapped mediation analysis was applied to examine the mediation model. Results indicated that marital problem-solving was a significant mediator in the link between mindfulness in marriage and marital adjustment in married individuals. The findings obtained in this research were interpreted in line with the literature, and suggestions were presented for researchers and practitioners.

Citation: Almasarani, Z. N., & Bakalım, O. (2025). The association between mindfulness in marriage and marital adjustment: The mediating role of marital problem solving. *Anadolu University Journal of Education Faculty*, *9*(1), 44-56. https://doi.org/10.34056/aujef.1504746

1. Introduction

Marriage is a social structure that ensures the next generation's survival, establishes reciprocal responsibilities, and facilitates essential life activities like becoming a parent and having children (Özabacı & Erkan, 2014). Achieving and maintaining marital adjustment becomes crucial to ensure marital longevity and satisfaction because marriages are typically expected to last a lifetime (Şentürk, 2013; Gürsoy, 2022). The marital adjustment refers to the ability of spouses with different personalities to adapt to the changing conditions of life together, to solve their problems through compromise, to communicate well, and to complement each other in achieving their goals (Spanier, 1976). For this reason, couples need to develop cognitive and behavioral skills that will aid them in their marriages. Therefore, understanding the dynamics that enhance marital adjustment is significant in the context of long-term relationship satisfaction.

Effective problem-solving, including constructive and empathetic conflict resolution, is another crucial factor for maintaining healthy relationships (Bayraktaroğlu & Çakıcı, 2013; Fincham & Beach, 2010). A positive attitude towards challenges can lead to successful partnerships (Yılmaz & Mamirova, 2018). Bayraktaroğlu & Çakıcı (2013) found that problem-solving abilities are the most significant predictor of marital adjustment.

Another important component that influences the quality of problem-solving in marriage is mindfulness. Spouses must focus on the current situation while using problem-solving skills and not blaming their partners for past behaviors. This approach is directly related to the concept of mindfulness, which is another significant variable associated with marital adjustment. Mindfulness involves being fully aware of the present moment without judgment, and individuals who practice mindfulness in their marriages are more attuned to their partner's needs and emotions (Kabat-Zinn, 2005). As these individuals stay grounded in the present, they can constructively navigate conflict, enhancing marital harmony (Brown, Ryan, & Creswell, 2020; Guendelman et al., 2017). Consequently, marriage mindfulness may improve problem-solving skills and strengthen overall marital adjustment.

1.1. Mindfulness in Marriage

Mindfulness denotes being aware of what one is experiencing, living in each moment, and accepting it (Kabat-Zinn, 2005). Some research findings have confirmed that mindfulness is a factor that increases the quality of the relationship between husband and wife in marriage (Bögels et al., 2010; Duncan, 2007; Kohlenberg et al., 2015; Pratscher et al., 2018; Burpee & Langer, 2005). In marriage, mindfulness helps improve emotional interactions between partners, leading to constructive outcomes for both individuals and the relationship. When couples are mindful of each other's emotions and needs, their communication improves, fostering deeper emotional intimacy and mutual understanding. This concept is often called mindfulness in marriage (McGill et al., 2016; Gambrel & Keeling, 2010).

Studies have investigated the role of mindfulness between couples and have consistently shown that mindfulness makes a significant contribution to intimate relationships (Barnes et al., 2007; Burpee & Langer, 2005; Wachs & Cordova, 2007). In such relationships, mindfulness is positively associated with relationship satisfaction, reduced relationship stress, partner acceptance, and empathy (Barnes et al., 2007; Pruitt & McCollum, 2010; Wachs & Cordova, 2007). Consequently, the concept of mindfulness has entered the scope of family and couple counseling because of how it affects the individual's ability to express his or her emotions, to cope with complex emotions, and to develop feelings of love, respect, mercy, and compassion by establishing healthy communication with the other person (Barnes et al., 2007; Gehart & McCollum, 2007; Dunn et al., 2012; Kozlowski, 2013).

Consequently, mindful individuals are adept at connecting with themselves and directing their attention toward their actions (Brown & Ryan, 2003). This ability helps them remain current and develop practical solutions while establishing interpersonal relationships. Moreover, mindfulness enables couples to make healthier decisions and contributes to resolving problems, promoting more significant adjustment within the marriage (Kabat-Zinn, 2005).

1.2. Marital Problem Solving

In a healthy marital relationship, harmony, effective communication, and getting along with the spouse are important (Robinson & Blanton, 1993). Some researchers agree that communication is necessary for resolving interpersonal problems (Gottman, 1979; Noller et al., 1997). When a problem arises, one or both partners should express their feelings and thoughts regarding the problem and offer suggestions on how it should be solved. Effective communication is widely recognized as a core mechanism for resolving interpersonal problems, and recent research emphasizes its role in managing conflict within marriage (Gottman, 1979; Noller et al., 1997; Bradbury et al., 2020). When a problem arises, one or both partners must express their feelings and thoughts about the issue and offer suggestions for resolution.

Problem-solving strategies are generally classified as constructive or destructive, depending on their impact on the relationship and their ability to facilitate conflict resolution (Gottman, 1994). Constructive problem-solving behaviors include identifying the problem, offering solutions non-judgmentally, providing positive feedback, and being open to each other's perspectives (Halford & Markman, 2017). These strategies emphasize persuasive techniques rather than threats and criticism. By fostering mutual understanding and empathy, constructive responses to conflict build emotional closeness and create a supportive environment where couples can handle issues together (Noller et al., 1997; Burleson & Goldsmith, 1998; Lavner et al., 2020).

In contrast, destructive behaviors are highly damaging and critical, including criticizing, blaming, complaining, and humiliating the partner. Destructive behaviors increase negativity and disrupt couples' problem-solving efforts, driving a wedge between partners and making them feel unsupported. This significantly reduces the likelihood of finding a constructive solution (Burleson & Goldsmith, 1998; Gottman, 1994). In other words, destructive behaviors focus on criticizing and blaming others rather than offering possible solutions to the problem at hand (Cast et al., 2006). The more extended negative communication continues, the more difficult it becomes for couples to reach a consensus (Vuchinich, 1987).

Studies consistently show that communication is more effective when partners avoid accusatory, critical, or belittling speech (Gottman & Levinson, 1988; Noller et al., 1997). Furthermore, recent findings emphasize the role of positive communication strategies in preventing conflict escalation and improving long-term marital satisfaction (Timmons et al., 2021; Lavner et al., 2020).

1.3. Marital Adjustment

As social beings, humans can adapt. Adaptation is showing a behavioral pattern in accordance with the changes in the environment (Kowsar & Rahim, 2019). People can live most happily and healthily when they can adapt to the society in which they live. Since marriage is often part of this life, finding a way to live harmoniously with a spouse is important. Marital adjustment is defined as the degree to which one spouse's behavior aligns with the expectations of the other (Şentürk, 2013). Couples who demonstrate high levels of marital adjustment can reach agreements on issues and resolve conflicts constructively (Erbek et al., 2005). In such families, roles are well-defined, and family members develop trust in themselves and each other.

While communication is essential to marital relationships, effective communication is critical in fostering mutual understanding and strengthening marital harmony by bringing spouses closer together (Şener & Terzioğlu, 2008). Studies have consistently shown that problem-solving styles (Karney & Bradbury, 1995), empathetic communication, and respectful, open dialogue significantly contribute to marital adjustment (Tili & Barker, 2015). In Turkish literature, problem-solving skills are frequently cited as one of the primary factors influencing marital adjustment (Hatipoğlu, 1993; Hasta, 1996; Erbek et al., 2005; Güven & Sevim, 2007). Research has indicated that when couples possess strong problem-solving abilities, they are more likely to experience higher levels of marital satisfaction and contribute to marital harmony (Gürsoy, 2004). These findings highlight that couples who can discuss issues without disregarding their partner's needs and pay attention to their language and behavior during conflict

resolution tend to have healthier relationships. Similarly, a study by Bayraktaroğlu & Çakıcı (2013) found that conflict resolution skills are the strongest predictor of marital adjustment. More recent studies confirm these findings by emphasizing the importance of adaptive communication and conflict resolution in sustaining long-term marital satisfaction. Couples who effectively manage conflicts and communicate empathetically are less likely to experience marital distress (Lavner et al., 2020). These findings reinforce that problem-solving skills and respectful communication remain vital in predicting marital adjustment and ensuring relationship stability.

1.3. Present Study

This research examines the mediating role of marital problem-solving in the relationship between mindfulness in marriage and marital adjustment. Upon examining the literature, it was noted that there were dual studies on these concepts (Deniz et al., 2017; Batık & Kalkan, 2017; Parlar & Akgün, 2018), but no study was found in which all three variables were studied together. The significance of this study stems from its potential contributions to the domains of relationship counseling and psychological interventions. Mindfulness-based therapies are gaining popularity as powerful techniques for enhancing emotional regulation and conflict resolution. However, while mindfulness has been examined in intimate relationships, the mediation role of marital problem-solving in mindfulness and adjustment has yet to be thoroughly investigated. This study could provide new insights into how couples can be assisted in their marriages by combining mindfulness and problem-solving strategies. Counselors and therapists can design more targeted ways to increase marital satisfaction and decrease marital conflict by knowing how these variables interact (Moghadasali et al., 2021). In light of this information, the present study examined the mediating role of marital problem-solving in the correlation between mindfulness in marriage and marital adjustment. For this purpose, the following hypotheses were formulated:

H1: Mindfulness in marriage is positively linked to marital adjustment.

H2: Mindfulness in marriage is positively linked to marital problem-solving.

H3: Marital problem-solving is positively linked to marital adjustment.

H4: Marital problem-solving mediates the relationship between mindfulness in marriage and marital adjustment.

Figure 1 presents the hypothesized model. As seen in the figure, we hypothesized that higher levels of mindfulness in marriage would promote higher levels of marital problem-solving and marital adjustment.

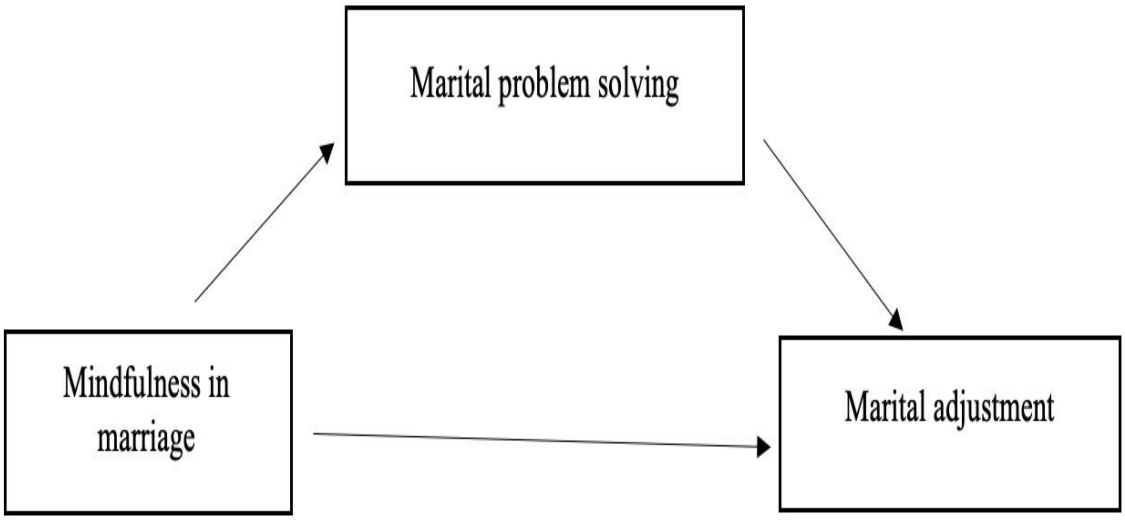

Figure 1: The hypothesized model

2. Method

Regarding the study, information about participants, data collection tools, and procedures are given in this section.

2.1. Research Design

The current study aimed to examine the links between mindfulness in marriage, marital problem-solving, and marital adjustment, emphasizing the role of marital problem-solving as a mediator in the relationship between the two. As a result, a correlational research design was chosen. This design is conceptualized "to determine relationships between two or more variables and to explore their implications for cause and effect," making it the most appropriate model for this research (Fraenkel et al., 2012).

2.2. Participants, Procedure, and Ethical Considerations

The participants in this study were individuals residing in various cities across Turkey who had been married for at least one year and voluntarily agreed to participate. A convenience sampling method was employed to recruit the participants, allowing for the inclusion of easily accessible and nearby individuals, which enhanced both the speed and practicality of the study (Yıldırım & Şimşek, 2016). When determining the sample size, the requirement was that the number of participants should be six times the number of items in the scales (Tabachnick & Fidell, 2013). The total number of items in the scales used in this study was 36, meaning the minimum required number of participants was 216 (36x6=216). In conclusion, the study participants comprised 422 married people, 221 female (52.4%) and 201 male (47.6%). 29.9% of the participants had been married between 1 and 9 years, 37.0% between 10-19 years, 28.0% between 20-29 years, and 5.2% for 30 years or more.

First, the necessary permissions were obtained to use the data collection tools in the research. After, the ethics committee permission was obtained from İzmir Democracy University Social and Human Sciences Ethics Committee (2021/08-03). The data was obtained from adult married individuals living in Turkey. Convenience sampling was used to get the data for the study. After obtaining usage permission, the scales and personal information form were uploaded to an internet portal. Upon clicking the shared link, participants were first taken to the informed consent page, which included details regarding volunteering, confidentiality, and the study's goal. The scales within the study's parameters were accessible to anyone who read the consent form and checked the box "I agree to participate in the study." The scales and the personal information form took roughly twenty minutes to complete.

2.3. Measures

2.3.1. Personal Information Form

The researchers designed this to collect information regarding the participants' age, gender, education level, socioeconomic status, years of marriage, and number of children.

2.3.2. Mindfulness in Marriage Scale

The Mindfulness in Marriage Scale, developed by Erus & Deniz (2018), was used to measure the levels of interpersonal mindfulness within marriage. It consists of 12 items and is rated with a 5-point Likert type. The highest score that can be obtained from the scale is 60, and the lowest score is 12. Exploratory and confirmatory factor analyses of the scale were conducted, and the internal consistency coefficient was found to be .87 (Erus & Deniz, 2018). Within this research's scope, the scale's reliability coefficient was found to be .84.

2.3.3. Marital Problem-Solving Scale

Baugh et al. (1982) developed the Marital Problem-Solving Scale, which measures spouses' problem-solving abilities in marriage. The scale was adapted into Turkish by Hünler (2002). Validity and reliability studies were conducted by Hünler and Gençöz (2005). The scale consists of 9 items and has a

7-point Likert-type rating. Unlike the original form, the 7-point Likert type rating was changed to the 5-point Likert type in the adaptation form. The highest score on the scale can be 45, and the lowest score can be 9. The internal consistency coefficient of the original scale was calculated as .95. The test-retest correlation was calculated as .86. As a result of Hünler and Gençöz's study (2005), the internal consistency coefficient of the scale was calculated as .91, and the Cronbach alpha reliability coefficient was calculated as .93. Within the scope of this research, the reliability coefficient of the scale was found to be .92.

2.3.3. Marital Adjustment Scale

The Marital Adjustment Scale, developed by Locke and Wallace (1959), measures the marital harmony of married individuals. Validity and reliability studies in Turkey were conducted by Tutarel-Kışlak (1999). The scale comprises two factors. The first factor includes nine items related to general harmony and agreement in emotions, sexuality, and social norms. The second factor consists of six items that pertain to relationship styles, such as leisure activities, conflict resolution, and trust. High scores on the items in the first factor indicate a firm agreement with one's spouse, while high scores on the second factor suggest a positive relationship style in marriage. The maximum score possible on the scale is 58, and the minimum score is 0. Marriages are considered harmonious when individuals score above 43.5, whereas those with lower scores are viewed as incompatible. In the original version of the scale, the internal consistency coefficient is .90, and the reliability coefficient is .84 (Locke & Wallace, 1959). When translated into Turkish, the internal consistency coefficient of the scale was found to be .84 (Tutarel-Kışlak, 1999). In the scope of this research, the scale's reliability coefficient was determined to be .86.

2.4. Data Analysis

Descriptive statistics were calculated using SPSS 24 (IBM Corp., 2015) to determine the participant characteristics, the internal consistency of the study's scales, and the relationships between the variables. Kolmogorov-Smirnov and Shapiro-Wilk tests, skewness, and kurtosis values were used to analyze indicators of normal distribution. The correlation between mindfulness in marriage, marital problem-solving, and marital adjustment was obtained by calculating the Pearson Product Moment Correlation coefficient. The mediating role of marital problem-solving in mindfulness-marital adjustment was tested by Preacher & Hayes's (2008) bootstrapping method for detecting total and specific indirect effects. Parameter estimates were computed using bootstrapping with 10,000 re-samples for the total and the specific indirect effects. If there is no zero in the 95 bias-corrected confidence interval, the indirect effect via the mediator in the model is deemed significant (Preacher & Hayes, 2008).

3. Results

The findings of the mediation analysis, which considers marital problem-solving a potential mediator variable in the relationship between mindfulness in marriage and marital adjustment, are shown in Table 2. As Mackinnon et al. (2004) stated, the indirect effect will not be significant if zero is within the confidence interval. The fact that the confidence interval values in the table do not contain 0 (zero) shows that the indirect effect is significant. Mindfulness in marriage alone predicted marital problem-solving at a statistically significant level (β = 1.03, t = 18.79, p < .001), and as a result of this analysis, mindfulness in marriage alone predicted 46% of the total variance of marital problem-solving. It was observed that mindfulness in marriage alone predicted 44% of the variance of marital adjustment (R^2=.44, p <.001) at a statistically significant level (β =.74, t =18.06, p <.001). Similarly, marital problem solving, considered a mediator variable, predicted 64% of the variance of marital adjustment (R^2=.64, p <.001), considered as a predictive variable, at a statistically significant level on its own (β =. 45, t =7.56, p <.001). Regression analysis was conducted simultaneously with the total mindfulness in marriage score, which we regarded as a predictor variable, and marital problem solving, which we regarded as a mediator variable. Our predicted variable, marital adjustment, was found to be significant, accounting for 63% of the total variance in a statistically significant manner (R^2=.63, p <.001). In Figure 2, the mediation model is displayed.

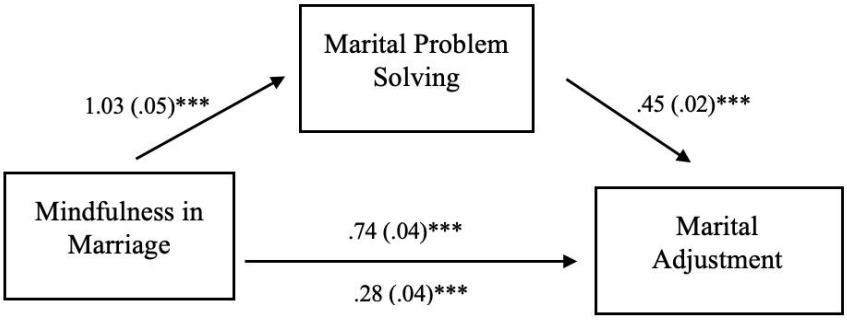

Figure 2. Analysis of the mediating role of marital problem-solving in the association between mindfulness in marriage and marital adjustment.

3.1. The Finding of Preliminary Analyses

In the data analysis, outliers, missing values, skewness, and kurtosis values were initially examined. No missing values were found since the participants completed the data without any omissions. Kolmogorov-Smirnov and Shapiro-Wilk tests were examined to test normality. Accordingly, the Kolmogorov-Smirnov and Shapiro-Wilk test results were statistically significant ($p < .05$). This result shows that the data were not normally distributed. Therefore, the kurtosis and skewness values of the scales were examined. The values obtained are presented in Table 1.

Table 1. Normality, skewness, and kurtosis analysis results for the scales

Scales	Kolmogorov-Smirnov			Shapiro-Wilk			Skewness		Kurtosis	
	Statistics	*sd*	p	Statistics	sd	p	Coefficient	Se	Coefficient	Se
Mindfulness in Marriage	.060	422	.001	.983	422	.000	.03	.23	-.40	.11
Marital Adjustment	.084	422	.000	.958	422	.000	.91.	.23	-.83	.11
Marital Problem-Solving	.104	422	.000	.948	422	.000	.07	.23	-.72	.11

Tabachnick and Fidell (2013) state that the data are normally distributed because the skewness and kurtosis values are within ± 1.5. Examining the obtained values leads to the conclusion that the data satisfy the assumption of a normal distribution.

The results of the correlation analysis revealed the relationship between variables within the scope of the research. The findings showed that there were significant correlations between all variables. It was determined that there was a significant and positive correlation between mindfulness in marriage and marital problem-solving, a significant and positive correlation between mindfulness in marriage and marital adjustment, and a significant and positive correlation between marital problem-solving and marital adjustment. The bivariate correlations, means, and standard deviations for the study variables are presented in Table 2.

Table 2. Correlations between variables

	Mindfulness in Marriage	Marital Adjustment	Marital Problem-Solving
Mindfulness in Marriage	-		
Marital Adjustment	.66*	-	
Marital Problem Solving	.67*	.77*	-
Mean	4.07	2.80	3.95
Standard deviations	0.49	0.56	0.75

*$p < 0.01$

Afterward, a mediation model, namely the relationship between mindfulness in marriage and marital adjustment as mediated by marital problem solving, was tested through Preacher & Hayes' (2008)

bootstrapping methods for detecting total indirect effects and direct effects. The findings obtained are presented in Table 3.

Table 3. Analysis of the mediating role of marital problem-solving in the association between mindfulness in marriage and marital adjustment.

Model Paths	Coefficient	*%95 BC Confidence Interval* Lower	Upper
Direct Effect			
Mindfulness in Marriage → Marital Problem Solving	1.03	.918	1.13*
Mindfulness in Marriage → Marital Adjustment	.74	.665	.827*
Marital Problem-Solving → Marital Adjustment	.45	.386	.503*
Indirect Effect			
Mindfulness in Marriage → Marital Problem-Solving → Marital Adjustment	.46	.369	.554*

Notes: N = 422. BC = Bias-corrected *p < .05.

4. Discussion

The current study explored the relationship between mindfulness in marriage and marital adjustment, testing the mediating role of marital problem-solving.

Previous findings have consistently shown that mindfulness in marriage is significantly associated with marital problem-solving (Bohn & Mosmann, 2020; Parlar & Akgün, 2018). Gesell et al. (2020) concluded that practicing mindfulness increases the likelihood of communicating with a spouse, considering issues, and looking for solutions to improve the relationship. Similarly, Langer & Moldoveanu (2000) found that individuals' mindfulness levels contribute to their problem-solving skills. However, when operating with a mindful attitude, spouses react more positively to each other and experience fewer problems (Burpee & Langer, 2005). Thus, this study contributed to the existing literature by strengthening the link between mindfulness in marriage and marital adjustment in a Turkish sample.

The second finding of the research is that there is a positive and significant correlation between mindfulness in marriage and marital adjustment. In other words, participants with high levels of mindfulness in marriage also exhibit high marital adjustment. There are findings in the literature that show positive and significant relationships between mindfulness in marriage and marital adjustment (Parlar & Akgün, 2018; Erus & Deniz, 2018). In addition, couples' awareness of each other's needs and understanding of their emotions is called mindfulness in marriage, and the contribution of this concept to marital adjustment has been supported by research (Barnes et al., 2007; Burpee & Langer, 2005; Wachs & Cordova, 2007). According to this finding, spouses' awareness of the present moment increases their level of mindfulness and thus increases the harmony between spouses. Spouses aware of their responsibilities support each other by assuming their responsibilities in marriage to achieve harmony more easily (Wachs & Cordova, 2007).

The third finding of the research shows a positive and significant correlation between marital problem-solving and adjustment. According to this finding, marriages of couples who rate their problem-solving skills in marriage as high tend to be more harmonious. Several studies indicate positive and significant relationships between marital problem-solving and adjustment (Lawrence et al., 2008; Halford & Markman, 1997; Deniz, 2020). Halford and Markman (1997) attributed marital harmony to the spouses' ability to constructively solve problems and maintain positive feelings and thoughts toward each other. In his study, Gürsoy (2004) found a positive relationship between problem-solving and marital adjustment. He also stressed that even if couples' marriages are harmonious, conflicts may arise, and how individuals resolve these conflicts matters. Taşköprü (2013) concluded that as individuals' problem-solving skills improve, their marriages become more harmonious and of higher quality.

The last finding of the study showed that marital problem-solving had a significant mediator role in the relationship between mindfulness in marriage and marital adjustment. The problem-solving abilities of couples with high levels of mindfulness in marriage are high, and in accordance with this result, the marital adjustment of the couples is also high. No other research has been found in which problem-solving skills in marriage play a mediating role in the relationship between mindfulness and marital

adjustment. The married person who recognizes the feelings and needs of their partner is considered consciously aware of the relational dynamics at play. For this reason, a person who notices and understands their partner's feelings and thoughts during an argument can behave appropriately. Thus, by factoring this into their relationship, individuals can better adapt to each other in marriage. In this study, the relationship between mindfulness in marriage and marital adjustment became more meaningful when the problem-solving variable in marriage was included in the analysis. It can be said that mindfulness in marriage contributes to marital problem-solving; marital problem-solving also contributes to marital adjustment. In this respect, marital problem-solving mediates between mindfulness in marriage and marital adjustment.

5.1. Implications for theory and practice

The present study contributes to the relevant literature on the association between mindfulness in marriage and marital adjustment, with marital problem-solving as a mediating role. Upon examining the literature, it was observed that there have been dual studies on these concepts (Batık & Kalkan, 2017; Parlar & Akgün, 2018), yet no research has investigated all three variables. Furthermore, studies on mindfulness have predominantly focused on university students, analyzing the effects of mindfulness-based interventions on various variables. However, it is important to note that relatively few studies address mindfulness in marriage (Erus & Deniz, 2018; Parlar & Akgün, 2018). While many studies have explored problem-solving skills, it is noteworthy that only a few studies have examined problem-solving within the context of marriage in Turkey (Batık & Kalkan, 2017; Yılmaz & Mamirova, 2018; Hünler & Gençöz, 2005). Therefore, investigating problem-solving skills in marriage, which impacts marital adjustment, is believed to enhance the literature.

5.2. Limitations and directions for future research

Along with the strengths of the current study, there are also some limitations. Firstly, because the study is a relational survey model, it does not allow for establishing cause-effect relationships between variables or obtaining information on changes over time. However, longitudinal studies can be conducted to obtain information on such changes and development. Another limitation of the current study is that the findings obtained from the research are based on data from the participants' self-reports. This may make a difference because the participants may not be able to answer precisely correctly. The concepts of mindfulness in marriage, marital adjustment, and marital problem-solving, which are the subjects of the study, are based on participant perception. Because of this, similar studies can be conducted with more accurate measurement tools and methods, such as structured scales measuring mindfulness in marriage, marital adjustment, and marital problem-solving, or with evaluation by professionals in an appropriate field. Finally, the current study's findings may pioneer establishing and maintaining healthy marriages, increasing the awareness of married couples, and developing models for developing quality relationships.

5. Conclusion

Married individuals need to focus on the present moment and consider their partner's situation to alleviate the problems experienced in the marriage. Although the mindfulness levels of individuals who achieve this are high, it has been observed that they also reach a higher level of satisfaction in their bilateral relationships (Kabat-Zinn, 2005). Couples with high marital adjustment get more satisfaction from their marriage and make decisions that will please both parties while solving their problems (Göknar, 2011; Hünler & Gençöz, 2005). In addition, mental health professionals who support individuals in developing and maintaining healthy and quality relationships can benefit from the empirical results reported in this study. Based on the results, the level of mindfulness in marriage stands out as a concept that will be beneficial to study in interventions to increase marital adjustment. Interventions that increase mindfulness in marriage can be included in therapy to increase marital adjustment. Individuals' problem-solving skills in marriage can be supported through interventions that increase marital adjustment. In research and studies on family counseling, it would be helpful to consider the variables of problem-

solving and mindfulness in marriage that affect marital adjustment. Individuals can be prepared for marriage by considering their problem-solving skills and mindfulness levels before marriage.

Statement of Researchers

Researchers' contribution rate statement:
Zülal Nur Almasarani: Conceptualization, Investigation, Resources, Writing. **Orkide Bakalım**: Data curation, Formal analysis, Methodology, Project administration, Software, Supervision, Validation, Writing – review & editing.
Conflict statement:
The authors declare that they have no conflict of interest.
Data Availability Statement: The data supporting this study's findings are available from the corresponding author upon reasonable request.
Acknowledgements:
Funding: This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.
Ethical Considerations:
This research was approved by the Izmir Democracy University Ethics Committee's Social and Human Sciences Ethics Committee's decision, No. 60, dated 06/08/2021.
Author Biographies
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ANADOLU UNIVERSITY

AUJEF
Anadolu University Journal of Education Faculty
aujef.anadolu.edu.tr

2025, 9(1), 57-75
Print ISSN: 1300-5448
Online ISSN: 2602-2249

RESEARCH ARTICLE OPEN ACCESS

Administrator opinions on the use of out-of-school learning environments in science and art centers†*

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† This research extends a study presented at the Ulusal Üstün Yeteneklilerin Eğitimi Kongresi (UYEK 2024).

* This research was approved by the Bursa Uludağ University Ethics Committee's Social and Human Sciences Ethics Committee's decision, No. 24, dated 22/03/2024.

Article Info

DOI: 10.34056/aujef.1500416

Article History:

Received: 12/06/2024
Revised: 11/11/2024
Accepted: 04/02/2025

Keywords

Gifted and talented students,
Out-of-school learning environments,
SAC Administrators.

Highlights:

- SAC administrators recognize out-of-school learning environments as valuable tools for student development.
- SAC administrators face financial, bureaucratic, and personnel constraints when conducting out-of-school learning activities.
- Out-of-school learning boosts student motivation, skills, interests, and enhances institutional reputation.
- SAC administrators recommend that collaboration, training and experience sharing be provided for better out-of-school learning.

Abstract

In today's world, relentless technological advancements have played a significant role in changing the structure and scope of the concept of learning. Learning is now extending beyond school boundaries at all educational levels. Particularly, students who come to Science and Art Centers (SAC) can enhance their existing talents by integrating the theoretical knowledge acquired at their schools with practical opportunities provided at these centers. In this context, planning activities in out-of-school learning environments has become a primary responsibility of SAC. This study aims to explore the opinions of SAC administrators (principals and vice principals) regarding out-of-school learning environments, understand their perceptions, address the gap in similar studies in the existing literature, and contribute to the field. A case study, a qualitative research method, was used in the research. The study group consists of 16 administrators (principals and vice principals) working in SAC centers located in the central and surrounding districts of Bursa province during the second semester of the 2023-2024 academic year. The tools used in the research are semi-structured interview forms prepared by the researchers. These forms consist of two main sections: the first section includes demographic information of the participants, and the second section contains a total of 6 open-ended questions. The data set obtained during the research process was subjected to content analysis. As a result of the research, SAC administrators stated that they have a good command of out-of-school learning environments, but they have difficulty in diversifying the existing concept in the field, that the applications made in out-of-school learning environments contribute to the students, and the institution, and that the most important problem SAC administrators have experienced at the point of implementing out-of-school learning environments in their institutions is financial, bureaucratic, and individuals-related.

Citation: Dilber, Y., Köse, Ç., & Yılmaz, A. (2025). Administrator opinions on the use of out-of-school learning environments in science and art centers. *Anadolu University Journal of Education Faculty*, *9*(1), 57-75. https://doi.org/10.34056/aujef.1500416

1. Introduction

The sustainability of a society and the ability of its individuals to adapt to changing competitive conditions are fundamentally dependent on the responsiveness and adaptability of its educational systems. Education is at the core of initiatives and decisions aimed at becoming an information society. It is indisputable that education serves as one of the primary dynamics driving a society's social, cultural, political, and economic development. Education is how individuals acquire behaviors, knowledge, skills, and competencies within specified goals. This process, which continues from birth to death, enables individuals to sustain their own lives while contributing to the development and progress of their society. Societies periodically modify their educational systems and develop policies targeting specific needs to enhance the qualifications of their human resources. The primary expectations of modern education systems include enabling students to learn through experience without being isolated from social life, transitioning them from passive listeners to active learners, fostering critical thinking and inquiry skills, enhancing their abilities in conflict resolution, problem-solving, and decision-making, developing creativity, recognizing relationships among concepts, and adopting an interdisciplinary perspective (Güngör & Göloğlu Demir, 2022). In particular, learning environments are crucial in the learning process, as they significantly influence students' motivation and performance (Agyekum, 2023; Bernard, 2012; Eshach, 2007). The design of learning environments should aim to support various learning pathways and optimize the learning process. These environments are expected to encourage students to transition from passive participants to active learners, foster critical thinking, creativity, and decision-making skills, and promote interdisciplinary perspectives by emphasizing the relationships between concepts.

Out-of-school learning environments prepare students for real life beyond school, offer diverse learning experiences, and emphasize collaboration and teamwork while fostering social skills such as leadership and conflict resolution. These qualities distinguish out-of-school learning environments significantly from traditional ones. Moreover, it is well-documented that such environments not only enhance students' motivation but also contribute to their academic success (Dönel Akgül & Arabacı, 2020; AIR, 2005; Riley, 2007; Schürmann & Quaiser-Pohl, 2022; Tolppanen & Aksela, 2013; Yıldırım, 2020). Education is not solely an activity conducted in formal settings; it is also carried out in informal environments and is a concept too broad to be confined within four walls. Studies conducted by Ertaş-Kılıç and Şen (2014) and Doldur and Ertaş-Kılıç (2023) revealed that students feel more comfortable, excited, and happy in informal settings compared to formal ones. Furthermore, out-of-school learning environments provide opportunities for students to construct knowledge based on their capacities and offer various options suited to their individual learning styles, which may differ from one student to another (Kubat, 2018; Yılmaz & Fırat Durdukoca, 2023).

Educational activities planned in out-of-school learning environments are described as beneficial for developing students' self-identity and social skills while also serving as engaging settings for students with low motivation (Aslan, 2020; Lin & Schunn, 2016; Ofsted, 2008; Schürmann & Quaiser-Pohl, 2022). Knapp (1996) emphasizes that for learning to be meaningful and enduring over time, students must first find the activity interesting and focus on it. Active participation in activities and relating the acquired knowledge to daily life is at the core of effective learning. Teaching conducted outside the classroom is enjoyable for students and enhances interactions between teachers, students, and students themselves (Topçu, 2017).

Furthermore, Bresler (1991) highlights that exploration and inquiry are vital for nurturing a child's natural curiosity, which forms the foundation of conceptual science learning. In this context, it can be argued that out-of-school learning environments stimulate students' curiosity, enhance their observation, research, and exploration skills, and positively influence their perceptions of science and technology (Eshach, 2007; Küçük & Yıldırım, 2020). Out-of-school learning environments extend beyond traditional museums and encompass a wide range of locations, including parks, camps, zoos, science/technology centers, botanical gardens (arboretums), planetariums, power plants (nuclear, hydroelectric, thermal, etc.), aquariums, space stations (simulators), observatories, water sources (dams, lakes, rivers, streams, etc.), industrial zones, construction sites, science fairs, factories, greenhouses,

libraries, science cafés/clubs, mosques, STEM laboratories, virtual reality environments, ruins, national parks, places of worship, inns/caravanserais, ancient cities, excavation sites, government mansions/municipality buildings, cultural centers, agricultural fields, nature centers, and numerous other sites of similar nature (Alkan & Bayri, 2019; Gül & Saz, 2023; Ramey-Gassert, Walberg III, & Walberg, 1994).

In summary, out-of-school learning environments are a broad concept that includes any space outside the classroom where formal or informal educational activities occur. The effectiveness of these environments depends on how the activities are structured and implemented. Poorly structured activities can hinder the achievement of curriculum goals (Moss, Esson, & Bazley, 2010; Yıldırım, 2020). Out-of-school learning activities can be conducted either as part of a specific plan and program to complement and enhance the curriculum or independently of any program, reflecting their flexible nature.

In educational activities planned in out-of-school learning environments, the presence of rich stimuli inherent to the nature of the environment enables students to test theoretical knowledge through hands-on experiences and practical applications in a natural setting. This not only enhances students' interest and encourages voluntary participation in activities but also facilitates more permanent learning outcomes (Behrendt & Franklin, 2014; Erçetin & Görgülü, 2018; Güneştan, 2023). González Motos (2016) identified seven criteria for effective out-of-school learning activities: establishing a clear connection between the activities and the school curriculum, conducting the activities under the guidance of a professional educator, planning a balanced duration for the activities (neither too long nor too short), ensuring regular participation as much as possible, employing experience-based or evidence-based methods, integrating theoretical content with game-based activities, and implementing various strategies for individual or group activities. Carrying out out-of-school learning activities within a structured program that enriches the curriculum and caters to different learning styles further emphasizes the importance of out-of-school learning environments.

Gifted students require more activities that address their individual learning needs, which will intensify their interests and curiosities alongside the regular classroom program (MEB, 2013: 6; Kutlu Abu, 2019). Out-of-school learning environments offer opportunities to captivate the curiosity of gifted students, attract their attention, and stimulate their desire to engage in research. Enrichment programs for gifted students should include activities tailored to their interests, integrate advanced content, processes, and products, have a comprehensive and interdisciplinary focus, promote effective, independent, and self-directed learning, require individualization and differentiation of the curriculum and instruction, and aim to develop problem-solving skills, and creativity (Bilgiç, Taştan, Kurukaya, Kaya, Avanoğlu, & Topal, 2021: 25). When supported by activities designed for gifted students, out-of-school learning environments contribute to enriching and differentiating the program. In these environments, activities are diversified to differentiate from the regular program (Bilgiç, Erdoğan, Ağaoğlu, & Ağaoğlu, 2012).

Article 15, paragraph f of the Science and Art Centers Regulation published by the Ministry of National Education in 2019 states: "*Participation in visits to historical sites, museums, industrial facilities, universities, festivals, fairs, and nearby areas, as well as attendance at conferences, performances, concerts, exhibitions, book signings, and all scientific, cultural, artistic, and social activities both within, and outside the institution, are considered part of educational, and teaching activities*." This provision opens the way for utilizing out-of-school learning environments in the education of gifted students. It emphasizes that such activities should be carried out within a structured plan.

Riley (2007) identified several benefits of out-of-school learning activities for gifted students:

1. Opportunities to develop positive social relationships with gifted peers and adults,
2. Opportunities to explore new areas of interest as well as to enhance existing interests and strengths,
3. Fostering autonomy, creativity, and leadership with guidance, and support,
4. Encouraging intellectual and academic creativity,
5. Enhancing decision-making, problem-solving, and communication skills,

6. Preventing failure, and the development of poor study habits,
7. Promoting a sense of belonging, increased enjoyment of school, heightened motivation, and the development of giftedness through enhanced school success,
8. A stronger, and more positive personal image through increased self-esteem, independent of academic abilities,
9. Helping students set stronger academic, and career goals.

In this context, it is clear that gifted students should also experience different learning environments to enhance their potential in addition to various teaching methods, tools, and techniques. However, there is a gap in the literature regarding the specific views of administrators working in Science and Art Centers (SAC) on out-of-school learning environments and a lack of in-depth examination of how these environments should be structured. This gap suggests a need for further research on the effective use of out-of-school learning environments and their contributions to students. Specifically, a detailed examination of the perspectives and experiences of administrators in SAC on this issue could provide valuable insights for better structuring and implementing out-of-school learning environments.

This study aims to fill the literature gap by examining SAC administrators' views on out-of-school learning environments and their contributions to students and institutions in detail. Our research also aims to present practical solutions for practitioners by exploring the challenges faced by administrators and the strategies they develop to overcome them. Additionally, by offering policy recommendations for the more effective use of out-of-school learning environments in SAC, the study seeks to provide valuable findings for data-driven policymakers and practitioners.

1.1. Purpose of the Research

This research aims to explore the views, perceptions, and perspectives of 16 school administrators (9 principals, 7 vice principals) from 9 SAC institutions located in the city center, and districts of Bursa in the 2023-2024 academic year regarding out-of-school learning environments. Based on the research question, "What are the views of SAC administrators on out-of-school learning environments?", the following sub-questions have been investigated.

1. According to SAC administrators, which spaces or environments are considered out-of-school learning environments?
2. According to SAC administrators, what are the contributions of out-of-school learning environments to students and the institution?
3. How do SAC administrators encourage teachers to participate in out-of-school learning activities?
4. How is the use of out-of-school learning environments (such as lessons, activities, frequency) in SAC institutions?
5. According to SAC administrators, what are the challenges encountered in the out-of-school learning process, and what strategies are used to resolve these challenges?
6. What policies do SAC administrators propose for the use and development of out-of-school learning environments?

2. Method

This section provides information about the research design, study group, data collection tools, process, and analysis.

2.1. Research Design

This research aims to examine the views of SAC administrators on out-of-school learning environments deeply. The case study method, one of the qualitative research designs, has been chosen to achieve this goal. The case study is a qualitative research method that allows one to examine events, processes, and interactions in a specific context in detail, offering flexible and in-depth data collection

possibilities (Yin, 1984). Toraman Türk (2023: 10) justified the use of case studies as a way to define and interpret a specific situation.

The case study method is particularly used in understanding complex processes and multi-dimensional phenomena (Gustafsson, 2017). One of the main reasons for selecting this method is its ability to provide rich data on how a multi-dimensional and dynamic phenomenon, such as out-of-school learning environments, is perceived and implemented contextually. Yin (2013) emphasizes that to achieve a comprehensive understanding of the case, one should not limit the study to a single case, and the potential interactions between the case and its context should be explored. He suggests that examining the case independently of its context could lead to significant problems in obtaining accurate results. The case study method offers a framework for understanding the unique characteristics and dynamics of the phenomenon by thoroughly investigating SAC administrators' experiences, perceptions, and strategies regarding these environments (Kümbetoğlu, 2015). In this research, a case study was used to deeply analyze the perspectives of SAC administrators on out-of-school learning environments and the contributions of these environments to students and institutions. The challenges encountered in this context and the strategies developed to address these challenges have also been identified. The preference for the case study method has also created a research strategy aimed at evaluating the data obtained within its context, which is in line with the purpose of this study. This strategy allows for a deeper understanding and interpretation of SAC administrators' experiences and perceptions of out-of-school learning environments.

2.2. Working Group

The study group of this research consists of 16 school administrators (9 principals and 7 vice principals) working in 9 Science and Art Centers (SAC) operating in Bursa province, excluding the SAC where the researchers are employed. To conduct this study, which enables an in-depth examination of the research topic, a purposive sampling method was preferred, aiming to select phenomena, events, and situations with specific characteristics for deep exploration and explanation. Among the purposive sampling methods, criterion sampling involves selecting individuals, situations, or objects that meet the predefined criteria (such as location, status, gender, etc.) for the sample. The reason for choosing maximum variation sampling, another method of purposive sampling, is that the situation itself consists of similar yet different conditions (Büyüköztürk et al., 2018).

In line with this, 9 out of the 10 Science and Art Centers in Bursa, including voluntary principals and vice principals, were included in the study. One of the researchers is currently the principal of a Science and Art Center and, in accordance with ethical principles, did not include the institution where they are employed in the study. The participating administrators were informed about the purpose of the research and where the research results would be used. The participating administrators are coded as K1, K2, K3, etc. The distribution of participants by gender, educational background, years of professional experience, years of working at SAC, and years of being a principal at SAC is presented in Table 1 below.

2.3. Data Collection Tools

In this study, the process of developing the data collection tool began with an extensive literature review to ensure the tool would effectively address the research questions. In this context, a semi-structured interview form consisting of 9 questions was created to gather in-depth insights from the participants. The interview form was reviewed by two different field experts, and adjustments were made to the form based on their feedback. A question that was deemed not to align perfectly with the research questions was removed from the form.

Creswell (2013) emphasizes the critical role of pilot studies in enhancing the validity of data collection tools. To ensure the validity of the interview form, an online pilot study was conducted with three SAC principals from different cities. Researchers such as Creswell (2013) and Maxwell (2018) have noted that multiple pilot studies are crucial for ensuring the validity of data collection tools and improving the reliability of research findings. Specifically, the first pilot study is used for a general evaluation, the

second study tests the effectiveness of the adjustments made, and the third study is used for final validation. This multi-stage process is essential to strengthen methodological rigor and ensure the accuracy of the data collected. It is a commonly recommended approach in the literature to enhance both the internal validity of the study, and the generalizability of the results (Creswell, 2013; Maxwell, 2018). Based on feedback from participants in the pilot studies, the form was revised and finalized.

Table 1. Demographic characteristics of the participants

Participant Code	Gender	Education Status	Branch	Director/Deputy Director	Professional Experience	Total Years of Work at SAC	Year of Management at SAC
K1	Male	Master's degree	Social Studies Teacher	Manager	23-28 years	16 years	7 years
K2	Male	Bachelor's degree	Physics Teacher	Manager	29 years and more	21 years	16 years
K3	Woman	Master's degree	Primary School Mathematics Teacher	Manager	10-15 years	1 year	6 months
K4	Male	Master's degree	Mathematics Teacher	Manager	23-28 years	5 years	5 years
K5	Male	Bachelor's degree	Turkish Language Teacher	Manager	17-22 years	6 years	5 years
K6	Male	Bachelor's degree	Philosophy Teacher	Manager	17-22 years	4 years	4 years
K7	Male	Master's degree	Primary School Teacher	Manager	11-16 years	2 years	2 years
K8	Male	Bachelor's degree	Literature Teacher	Manager	29 years and more	3 years	6 years
K9	Male	Master's degree	Primary School Teacher	Deputy Director	11-16 years	3 years	3 years
K10	Male	Bachelor's degree	Primary School Teacher	Deputy Director	23-28 years	3 years	3 years
K11	Male	Master's degree	Literature Teacher	Deputy Director	11-16 years	2 years	1 year
K12	Male	Bachelor's degree	Primary School Teacher	Deputy Director	29 years and more	2 years	2 years
K13	Male	Bachelor's degree	Primary School Teacher	Deputy Director	17-22 years	7 months	7 months
K14	Male	Bachelor's degree	Technology and Design Teacher	Deputy Director	15-20 years	7 months	7 months
K15	Woman	Master's degree	Social Studies Teacher	Deputy Director	11-16 years	7 years	4 years
K16	Male	Master's degree	History Teacher	Manager	29 years and more	20 years	16 years

The questions in the interview form were designed to deeply explore the participants' perceptions and experiences regarding out-of-school learning environments. These questions focused on key topics such as out-of-school learning environments, their contributions to students and teachers, challenges encountered in practice, and policies that need to be developed. The interviews were conducted one-on-one with the participants, each lasting an average of 25 minutes. All interviews were recorded with the participants' consent using audio recording devices. For one participant (a vice principal) who did not grant consent for audio recording, the researchers documented the interview through detailed notes.

2.4. Analysis of Data

The data collected in this study were analyzed using content analysis, one of the most commonly used methods in qualitative data analysis. Creswell (2013) and Yıldırım and Şimşek (2018) state that content analysis is a fundamental method. Content analysis involves examining and coding the data in line with the purpose of the research (Yıldırım & Şimşek, 2018, pp. 250-260). The researchers transcribed the interview records after the interviews and sent them to the participants for confirmation to ensure their accuracy. Creswell (2013) suggests that such a validation process is an important strategy to

increase the validity of qualitative research. Feedback from participants was obtained, confirming that the data were accurately reflected. Creswell (2013) emphasizes the critical importance of the process of coding data and creating themes In qualitative research for an in-depth analysis of the study, the following steps were taken in the content analysis process: the data were carefully read and coded, the relationships between the codes were examined, and similar codes were grouped together to form categories. Two independent field experts evaluated the reliability of the analysis to enhance its reliability. One expert is an administrator with a PhD in educational management and supervision; the other is a teacher with a PhD in science education. Both experts are also authors of this article. In line with the study's purpose and the data's characteristics, both experts independently conducted the coding and categorization processes. After the coding process was completed, the codes and categories created by the experts were compared. The reliability analysis method proposed by Miles and Huberman (1994) was used to assess the coding results' reliability. This method's consistency rate of at least 80% between the two coders indicates that the coding is reliable. In this study, the consistency rate was calculated as 87%. This rate is considered an important indicator reinforcing the reliability of the research findings. Although the consistency rate between the coders was high, some differences in the codings were observed. A meeting was held to resolve these differences. During the meeting, both experts discussed their views along with their justifications, and a consensus was reached after this process. Once the final agreement was reached, the analysis process was completed. Creswell (2013) highlights that independent review, and reliability analyses like these are important steps to increase the reliability of qualitative research. During the data analysis process, a reflective attitude was adopted throughout the research to minimize the researcher's subjective interpretations and maintain a more objective perspective. Creswell (2013) emphasizes that researchers should be aware of their own biases and potential influences on the research process and that it is crucial to minimize these effects. Therefore, throughout all stages of the study, the researchers used participant validation, ensured transparency in data analysis, applied audit trails, and received feedback from other researchers. It is believed that this contributed to grounding the results on a more objective foundation.

3. Findings

This section presents the findings obtained from the responses of 16 school administrators (9 principals, 7 vice-principals) working in 9 Science and Art Centers in the Bursa region. The researcher's own SAC is excluded from the scope of the study. The data obtained in accordance with the research aim were categorized under codes, and categories were developed based on the participants' views. Direct quotes from the participants' responses were used to summarize the findings. The first of these findings focuses on out-of-school learning environments.

3.1. Out-of-School Learning Environments (Places and Environments)

When SAC administrators were asked about the environments that come to mind when thinking of out-of-school learning environments, various spaces and activity areas that can be used outside the school building were listed. The out-of-school learning environments mentioned by the participants and their frequency values are presented in Table 2.

The findings obtained from the responses of SAC administrators clearly indicate that museums are most commonly associated with out-of-school learning environments. Nature trips, science centers, and historical sites follow closely behind. Other locations, and activities were mentioned at lower frequencies. These findings reveal that the out-of-school learning environments perceived by SAC administrators are quite diverse, and rich.

One participant stated, "Museums, art galleries, nature, national parks, science centers, factories, workshops, farms, local and general historical sites, exhibitions, fairs, and festivals come to mind when we think of out-of-school learning environments. In short, out-of-school learning environments are schools without walls." (K7). Another participant emphasized the various dimensions of out-of-school learning environments by stating, "Out-of-school learning environments involve going to places where

knowledge exists in real life, such as nature, streets, forests, factories, workshops, and laboratories, outside the formal and rigid classroom setting." (K8). Similarly, "You can find education everywhere, outside of school." (K13) highlighted the broad scope of out-of-school learning environments. Participants also pointed out that these environments should be chosen based on the lesson's subject. "In other words, visiting places related to the lesson's subject is more appropriate." (K14) and "The chosen environment will vary depending on what you are doing and your goal." (K15) emphasized the importance of selecting environments that align with the lesson's content while ensuring this is done within a planned framework.

Table 2. Out-of-school learning environments and frequencies

Category	Code	f
Education and Science	Museums	11
	Science Centers	6
	Laboratories	4
	Universities	3
	Libraries	3
	Agricultural Institutes	2
History and Culture	Historical Sites	5
	Workshops	4
	Book Fairs	3
	Exhibitions/Art Galleries	2
Nature and Environment	Nature Tours	7
	National Parks	3
	Field Trips	2
	Farms	1
	Zoos	1
Industry and Technology	Factories	4
Entertainment and Recreation	Sports Activities	2
	Playgrounds	2
	Cinema	1
	Camps	1
	Festivals or Carnivals	1
Special Trips	International Trips	1
	Out-of-State Trips	1
General Learning Environments	Anywhere Outside School	3

In summary, SAC administrators agree on the diversity and richness of out-of-school learning environments. These environments offer students different learning experiences, ranging from museums to nature trips, from science centers to historical sites. One participant described out-of-school learning environments as "*Family environment (many behaviors exhibited in the future are influenced by family members' behaviors), museums (children see and learn many objects they cannot see or that are no longer functional in their time, which helps them connect with the past), small workshops (ceramics, carpentry, manufacturing places, etc.)*" (K16). Another participant highlighted the importance of various spaces: "*Museum, cinema, nature trips, reading books in cafes, university tours, science centers, book fairs*" (K11).

3.2. Contribution of Out-of-School Learning Environments to Students and Institutions

When SAC administrators were asked about the effects or contributions of out-of-school learning environments on students' skills, the participants emphasized that these environments contribute to developing various skills in students, including cognitive, social, and personal skills. The contributions and frequency values indicated by the participants are presented in Table 3.

When SAC administrators were asked about the impact and contribution of out-of-school learning environments on students' skills, they emphasized that these environments help develop various skills, including cognitive, social, and personal abilities. The contributions mentioned by the participants and their frequency values are displayed in Table 3. Based on the responses from the SAC administrators, it seems they believe out-of-school learning environments contribute to students' skill development in several ways. Hands-on learning (f=11), thinking skills (f=7), and socialization (f=6) are among the most frequently cited contributions. These findings underscore the importance of out-of-school learning environments for students. SAC administrators stated that these environments significantly support

students' cognitive development. One participant remarked, "Out-of-school learning environments are the epitome of the hands-on learning model. The knowledge students acquire in this way tends to be more lasting." (K5) In addition to hands-on learning and enduring understanding, it was also noted that these environments enhance students' social skills. For instance, one participant shared, "Socializing, teamwork, and the self-confidence that the different environment provides for the child's self-expression are crucial. Gifted children, on the other hand, may struggle to express themselves in every setting. When I take that child to the beach, they engage in activities they might not do in the classroom, allowing them to express themselves more freely." (K1) Out-of-school learning environments also enable students to gain diverse perspectives and develop problem-solving skills. One participant expressed, "Out-of-school learning environments help students gain different perspectives and foster learning through concrete experiences. They learn while having fun, making hands-on learning a reality." (K10)

Table 3. Contributions and frequencies of out-of-school learning environments to students

Category	Code	f
Cognitive Development	Learning by Doing	11
	Thinking Skills	7
	Permanent Learning	4
	Different Perspectives	2
	Learning Richness	2
	Decision Making	1
	Problem Solving	1
Social Development	Socialization	6
	Teamwork	2
Individual and Emotional Development	Recognizing Your Talent	4
	Observation	3
	Self-Expression	2
	Self-Confidence	2
	Discovering Interests	1
	Life Skills	1
	Motor Skills	1
	Preventing Bias	1

Additionally, participants mentioned that out-of-school learning environments are ideal for latent learning and hands-on learning. They also pointed out that these environments increase the retention of the learned knowledge. One participant highlighted, "*It would be more realistic, more meaningful, and could be more lasting. It attracts the child's attention. Hands-on learning takes place, social skills, problem-solving skills, thinking skills, and attitudes are enhanced*." (K4). Another participant said, "*Out-of-school learning environments are perfect for us because we have enrichment and differentiated education, so these environments are a perfect fit. For example, if I give an example from Bursa Technical University, witnessing the process of making drones taught us a lot*." (K5). "*I can say that it's the essence of hands-on learning*." (K5) and "*Out-of-school learning environments generally provide lasting learning through hands-on experiences. The student establishes a direct link between the information and its use, doesn't forget it, and can recall it from memory at the right time and place.*" (K8) were statements emphasizing the contribution to the retention of knowledge. Another participant said, "*In these environments, the child experiences spontaneous and latent learning rather than planned learning processes like in school. Since these learnings happen through hands-on experiences, they are more lasting and can be recalled when needed.*" (K9)

In summary, out-of-school learning environments significantly develop students' cognitive, social, individual, and emotional skills. These environments help students acquire various skills, including hands-on learning, socializing, gaining different perspectives, and improving knowledge retention. A participant stated, "Social skills develop. Hands-on learning leads to lasting understanding. Students can compare characters in novels and stories with those in real life." (K11), emphasizing the contribution of out-of-school learning environments to social skills. Another participant expressed, "Out-of-school learning environments enhance students' understanding of events concretely, increasing their attention and motivation while fostering personal and social skills." (K16), highlighting the benefits of these environments for students.

When SAC administrators were asked about the contribution of out-of-school learning activities to their institutions, it became evident that they believe these activities significantly impact institutional

success, image, and sense of belonging. Participants emphasized that such activities increase the institution's recognition and strengthen the motivation and commitment of teachers and students. The contributions and frequency values mentioned by the participants are presented in Table 4.

Table 4. Contributions and frequencies of out-of-school learning environments to the institution

Category	Code	f
Institutional Development	Organizational Success	6
	Institutional Image	5
	Organizational Capacity	1
	Materials and Teaching Aids	1
	Richness of Application	1
	Organizational Culture	1
Belonging	Parental Belonging	2
	Student Belonging	2
	Student Happiness	1
	Teacher Happiness	1
Teamwork	Team Spirit	2
	Sharing Responsibility	1
Teacher/Student Development	Teacher Competence	1
	Peer Learning	1

One participant stated, "*It definitely helps increase the institution's image, recognition, and reputation. Since out-of-school learning activities provide teachers, and students with the opportunity to acquire new knowledge, and experiences, it supports their success in different fields and contributes to their development.*" (K2). Another participant noted, "*If you organize well, the parent's perspective on the institution changes. They can be more generous in supporting you.*" (K1). A further participant said, "*The parent's sense of belonging to the institution increases. The parent asks about areas where they can support. They play an active role in the decisions the institution makes. The student adopts the institution, creating a more enthusiastic learning environment.*" (K11). These statements clearly highlight the financial, and moral contributions that out-of-school learning environments make to the institution.

It is concluded that contributions such as increased institutional success and image, enhanced parent and student affiliation, and development of institutional capacity occur as a result of the variety of activities conducted in out-of-school environments. This demonstrates the significant role out-of-school learning environments play in institutional development and affiliation.

3.3. Incentives Given to Teachers for Out-of-School Learning Activities

When SAC administrators were asked how they encourage teachers to use out-of-school learning environments, they were found to use various motivational methods. The participants indicated that they provide administrative, psychological, and motivational support, offer bureaucratic ease, and provide financial assistance to teachers. The motivational methods mentioned by the participants and their frequency values are shown in Table 5.

The findings from the responses of SAC administrators show that teachers receive various types of support for out-of-school learning activities. Bureaucratic ease (f=6) and early planning at the beginning of the term (f=6) are among the most frequently mentioned types of encouragement. These findings highlight the diversity of support provided by school administrators to teachers for conducting out-of-school learning activities.

Table 5. Types and frequencies of support provided to teachers for out-of-school learning activities

Category	Code	f
Administrative Measures	Bureaucratic Ease	6
	Early Planning	6
	Resource Support	2
	Mandatory Requirement	1
	Ease in the Program	1
Psychological/Motivational Support	Encouragement	3
	Recommendation	3
	Positive Attitude	3
Promotion/Visibility	Social Media Shares	1

One participant stated, "We encourage them. Ideas are generally supported in a positive direction. We support teachers by motivating them to take their ideas further." (K11). Another participant said, "I encourage teachers to carry out activities in out-of-school learning environments. I constantly mention it in meetings. In particular, I try to align colleagues' schedules who can organize trips more easily." (K15). These statements illustrate the support provided by school administrators to teachers for out-of-school learning environments. School administrations prioritize out-of-school learning environments, offering both administrative and psychological support to motivate teachers. Additionally, it can be concluded that administrators adopt strategies such as mandatory planning at the beginning of the term and applying pressure to implement out-of-school learning activities.

3.4. Out-of-School Learning Environments in SACs (Courses-Activities-Frequency)

When SAC administrators were asked about the types of activities conducted in their institutions within the framework of various lessons and the frequency of these activities, it was found that such regular activities occurred in multiple lessons and events. Participants mentioned organizing various activities, including nature trips, museum visits, and laboratory work in subjects like science, mathematics, biology, and visual arts. The participants detailed the frequency and scope of these activities. The activities noted by the participants and their frequency values are presented in Table 6.

Table 6. Lessons, activities, frequency in out-of-school learning activities

Tema	Category	Code	f
Out-of-School Learning Environments	Lessons	Science	10
		Biology	8
		Mathematics	6
		Classroom Teaching	6
		Visual Arts	5
		History	4
		Music	4
		English	3
		Social Studies	3
		Physics	3
		Geography	2
		Turkish	2
		Literature	2
		Chemistry	2
		Technology and Design	1
	Activities	Nature Trip	13
		Museum	5
		GUHEM	5
		Science Centers	4
		Historical Sites	4
		Author Meetings	2
		Innovation Center	2
		TARGEM	2
		Artistic Events	2
		University	2
		Factory	2
		Archaeological Park	1
		Abroad	1
		Library	1
		Book Fair	1
		Excavation Site	1

		Festival	1
		Agricultural High School	1
		Workshops	1
	Frequency	Not Very Frequent	11
		2-3 Events per Term	4
		10 Events per Year	1

In response to a participant's statement, "In subjects such as biology, mathematics, chemistry, classroom teaching, visual arts, and science, participation in the finals of TUBITAK middle and high school competitions is organized both within the city and outside of it. Additionally, activities for the TEKNOFEST finals in physics, chemistry, biology, and technology design have been conducted outside the city." (K10), another participant remarked, "In the Turkish language subject, we hold book fairs and author meetings; in art, we organize museum visits and sculpture workshops using materials found in nature. These activities are held once a month across different subjects." (K3), explaining how often extracurricular learning activities are organized at their institution. Another participant mentioned, "We organize activities such as nature trips, visits to national parks, historical sites, and geographical formations. These activities are occasionally conducted, depending on weather conditions, and with the approval of teachers and administrators." (K15), indicating that such activities are less frequent at their institution.

These activities across various subjects like biology, mathematics, science, history, and art enrich students' learning experiences and aid them in acquiring knowledge in diverse fields. This underscores the crucial role of extracurricular learning environments in education. The findings of this study clearly demonstrate the variety and frequency of extracurricular learning activities in SAC institutions and the importance of activities related to different subjects. Activities such as nature trips, museum visits, and laboratory work in science, biology, mathematics, and visual arts enhance students' learning processes and enable them to develop knowledge in various disciplines. This suggests that extracurricular learning environments contribute to students' academic achievements and their creative and critical thinking skills. Furthermore, these environments are essential for helping students apply the theoretical knowledge they acquire to real-life situations.

3.5. Policy Recommendations for Out-of-School Learning Activities

When SAC administrators were asked about the policies they could develop for using extracurricular learning environments, they proposed suggestions involving administrative, financial, and structural arrangements. Participants suggested making extracurricular learning activities mandatory and providing financial and logistical support. These policy suggestions significantly contribute to the more effective and widespread use of extracurricular learning environments. The participants' suggestions are shown in Table 9.

Table 9. Policy recommendations for out-of-school learning activities

Category	Code	f
Administrative and Structural Arrangements	Obligation in the Guidelines	7
	Protocols	5
	Bureaucratic Ease	3
	Teacher Competence	3
	Structural Changes in SAC	2
	Providing Ease for Students	1
	Physical Facilities of SAC	1
Stakeholder Support	Financial Support	4
	Transportation Support for Students	1
	Parental Involvement	1
Event Design	Interdisciplinary Activities	2
	Appropriate Design of Activities for Their Purpose	1

One participant stated, "In SAC institutions, I would make it mandatory to have a certain number of extracurricular activities in the programs until the system is well established. This could take five years or even ten. Until the system feels settled, I would establish minimum and maximum limits. I would set a lower limit for the number of extracurricular activities that must be implemented, either subject-based or through interdisciplinary activities." (K7). Another participant said, "I would include activities in the SAC framework program that focus on utilizing extracurricular learning environments or set a certain number to be completed throughout the year. I will wait for feedback on these activities. Additionally, I would ensure unlimited access or support for activities conducted by other institutions." (K3), emphasizing the necessity of including them in the program. A third participant noted, "Teachers need training. One option could be museum education or training on planning extracurricular activities. I'm not sure, but they require some training. Also, it should be included in the regulations. Every discipline should plan at least one extracurricular activity per year." (K14), highlighting the need for in-service teacher training on planning extracurricular learning environments. These statements clearly reveal various policy suggestions for extracurricular learning activities, along with the reasoning behind them. We can say that policy proposals in areas such as administrative and structural arrangements, financial support, and activity design are crucial factors in ensuring the effective and widespread implementation of extracurricular learning activities.

4. Discussion and Conclusion

This study examines the views of the directors and deputy directors of the nine Science and Art Centers (SACs) operating in Bursa Province regarding out-of-school learning environments. Based on the findings presented in the results section, several conclusions have been reached. The first notable finding in the study is the frequency with which the concept of museums is mentioned, which stands out as the most recurring. The reasons for this can be considered as follows: the absence of brochures introducing out-of-school learning environments specific to SACs in a historical center like Bursa, and the city's rich historical sites and museums providing a wealth of out-of-school learning environments. Weber (2022) emphasized the role of museums in nurturing versatile and critically thinking individuals with high emotional intelligence, a sense of citizenship, and democratic values. James (1987) noted that museum visits excitedly engage gifted students, encouraging them to take risks and grow. In this context, museums are one of SAC students' most important educational environments. The frequent mention of museums in the definitions of SAC administrators aligns with similar findings in Çetin's (2021) study. Furthermore, in Arkan's (2022) research, the concept of out-of-school learning environments developed by administrators was most frequently associated with museums, similar to the results of both this thesis and our study.

Another finding from the study aligns with the results of Arkan (2022) and Karbeyaz and Karamustafaoğlu (2021), indicating that out-of-school learning environments contribute to students' lasting learning and experiential learning through doing and seeing. This is consistent with the current research. Nundy (1999) explored the impact of field trips on middle school students and found that these trips influenced cognitive processes and offered students the opportunity to apply their knowledge. Furthermore, Lai (1999) discovered that the benefits students gained in the field could not be transferred back to the classroom in a study involving middle school students in Hong Kong. However, SAC administrators noted that out-of-school learning environments reinforce classroom learning. Therefore, this aspect differs from the findings of the current article. Taş and Gülen (2019) reported that out-of-school learning environments utilized in science lessons help improve friendship relations among students. Thus, this study's findings align with our research results. Similarly, the study by Kırıktaş and Eslek (2017) concluded that students readily structured the information after engaging in activities within out-of-school learning environments. Jones (2023) indicated that out-of-school learning environments shape school culture, help students discover their interests, and promote meaningful relationships with peers, thereby enhancing their social skills.

In our study, administrators stated that the educational activities conducted in out-of-school learning environments contribute to increasing the success of their institutions. In the study by Umur Erkuş and Taşdemir (2024), it was concluded that out-of-school learning environments increase students' academic success, and learning motivation, positively affect institutional image, and strengthen the interaction between students, and teachers. Wilson (2009) noted that out-of-school learning environments enhance the school's spirit. This expression of enhancing the school's spirit can be interpreted as uniting stakeholders on common ground, contributing to the institution's culture, and fostering a sense of belonging. Therefore, this study's findings align with our research results. Alkan (2023), Alkan and Bülbül (2024), and Aydemir and Toker-Gökçe (2016) stated that activities carried out in out-of-school learning environments help develop students' sense of belonging to the school, facilitate ownership of the school, and make them more likely to enjoy school. This aspect aligns with the results of our study.

One of the other findings in our research is that administrators provided the most bureaucratic support to teachers during the out-of-school learning environment process. In the article by Karbeyaz et al. (2024), teachers stated that they did not receive enough support from school administration when planning out-of-school learning activities (45%). In the study by Ergün and Aslan (2023), a large number of teachers reported facing administrative issues when planning out-of-school activities. Other studies (Selanik-Ay & Erbasan, 2016) pointed out problems with obtaining permissions, security, financial issues, and transportation when using out-of-school learning environments. The fact that out-of-school learning environments and activities are included in SAC regulations and that administrators are aware of their impact on student success suggests that administrators are more willing, open, and supportive of using these environments in educational processes.

A significant finding from our study is that the activities conducted by teachers in out-of-school learning environments were predominantly concentrated in the science and technology fields. In his article, Göksu (2020) highlighted the frequent use of out-of-school learning environments in practical science lessons during the period of Turkish educational history, particularly in Village Institutes. A prime example is the French "Excursion" course at Kayseri Village Teacher School, where outdoor field trips were organized, students researched trees, and explanations were provided on why leaves turned yellow. The focus on science in Village Institutes aligns with the findings of our study, suggesting a similar pattern.

As indicated by the administrators, the most frequent activity in out-of-school learning environments was nature trips. Dere and Çifçi (2022) found that teachers most commonly conducted nature trips, and observations as part of their out-of-school activities. In Arkan's (2022) study, it was found that social studies teachers most frequently engaged in field trips, and observation-based activities, which is consistent with the results of our study. According to Heras, Medir, and Salazar (2019), participation in outdoor activities or field trips provides students social, emotional, and behavioral benefits. Therefore, nature trips benefit SAC students' behavioral, social, and emotional development.

Many of the administrators stated that at least one event was held during a period at their institutions. In the study by Dere and Çifçi (2022), preschool teachers indicated that they sometimes used out-of-school learning environments in their institutions, suggesting a similarity between their results and ours. In Munday's (2008) study of 60 teachers in Australian middle schools, teachers acknowledged the benefits of out-of-school learning environments. However, they reported that such activities were conducted only once or twice a year, reflecting a similar pattern in our study. Key limiting factors included students receiving education outside regular hours at SACs, lessons being held in the evenings or on weekends, the need for official permits (from parents, schools, or the Ministry of Education), and transportation and resource challenges.

One of the main problems administrators highlight in the out-of-school learning process is the centers' financial constraints. Similar challenges have been reported in various studies involving school administrators. In Arkan's (2022) research, significant challenges faced by school administrators in out-of-school learning activities were identified, including administrative, environmental, and financial

challenges and difficulties stemming from educational stakeholders. Oberle, Zeni, Munday, and Brussoni (2021) categorized challenges in out-of-school learning environments into four themes: teacher qualifications, systemic factors (support from administrators, school policies/mission/vision, funding/resources, curriculum), cultural factors (school culture, societal beliefs about education, family background), and environmental factors (weather, natural environment-related issues). These challenges align with the findings of our research.

Administrators' most frequently developed solutions to these challenges were obtaining support from stakeholders. In studies by Aydemir and Toker-Gökçe (2016) and Alkan (2023), school principals emphasized the importance of securing financial support from stakeholders, especially parents, and negotiating with local governments and public institutions for partnerships. The findings from these studies align with our research results.

Regarding policy recommendations for improving the use and development of out-of-school learning environments, administrators most frequently suggested that the use of these environments should be made mandatory in the relevant legislation. Generally, SAC administrators' policy recommendations for out-of-school learning environments are related to proposed changes in legislation. They emphasized the need for activities to meet specific standards and be planned in advance to ensure their appropriateness and effectiveness. Based on this, various recommendations have been proposed to make out-of-school learning activities at SACs more effective and efficient.

Given our country's historical and cultural richness, out-of-school learning environments such as museums and science centers should be utilized more actively. To ensure SAC students benefit from these rich educational environments, at least one out-of-school learning activity should be planned every semester. Particularly in science-related lessons, nature trips should be organized to help students observe directly and solidify the theoretical knowledge learned in class. Collaboration with local authorities and signing protocols will help ensure the sustainability of these activities, overcoming transportation, and financial issues for SACs.

Teachers should be supported with in-service training to effectively plan and implement out-of-school learning activities. Administrative and bureaucratic assistance should be provided to teachers in organizing these activities. In this regard, the effective use of out-of-school learning environments should be strengthened through legislative arrangements by the Ministry of National Education, and teachers and school administrators should be encouraged to carry out these activities. Including more out-of-school learning activities in education councils or policy documents is believed to increase their usage in educational institutions.

Statement of Researchers

Researchers' contribution rate statement:
YD: Conceptualization, validation, methodology, writing-review and validation, original draft, data curation, supervision
ÇK: Investigation, data curation, writing-review and editing.
AY: Investigation, data curation, writing-review and editing.

Conflict statement:
The authors declare that they have no conflict of interest.

Data Availability Statement:
The data supporting this study's findings are available on request from the corresponding author. However, the data are not publicly available due to privacy or ethical restrictions.

Funding:
This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

Presentation(s) or Awards at a meeting:
This research extends a study presented at the Ulusal Üstün Yeteneklilerin Eğitimi Kongresi (UYEK 2024).

Ethical Considerations:
The Bursa Uludağ University Ethics Committee's Social and Human Sciences Ethics Committee's decision, No. 24, dated 22/03/2024, approved this research.

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ANADOLU UNIVERSITY

AUJEF
Anadolu University Journal of Education Faculty
aujef.anadolu.edu.tr

2025, 9(1), 76-90
Print ISSN: 1300-5448
Online ISSN: 2602-2249

RESEARCH ARTICLE OPEN ACCESS

Opinions of school administrators in high image schools on external pressure groups*

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* This research was approved by the Kocaeli University Ethics Committee's Social and Human Sciences Ethics Committee's decision, No. 23, dated 14/12/2023.

Article Info
DOI: 10.34056/aujef.1481145
Article History:
Received: 09/05/2024
Revised: 21/11/2025
Accepted: 07/02/2025
Keywords
School image,
Pressure group,
School management.

Highlights:

- External pressure groups influence administrators of schools and the demands of these groups.
- Pressure groups place diverse demands ranging from student enrollment and teacher selection to resource allocation
- Parents, the primary sources of pressure, use political figures and public officials to push their requests.
- School administrators accept legally appropriate requests and reject those that violate policies.

Abstract
This research aims to determine the demands of pressure groups towards school administrators working in schools with high image and the behaviors of school administrators towards these demands. The study group consists of 13 school administrators working in the Gebze, İzmit, and Çayırova districts of Kocaeli province in the 2023-2024 academic year. In selecting participants in the study, schools with high images were determined by consulting with district administrators. Interviews were held with 13 school administrators, including nine principals and four deputy principals, from the identified 30 schools. The study group was selected using a purposeful sampling method. In this study, the phenomenology pattern, one of the qualitative research methods, was used. Data were collected through face-to-face interviews by preparing a semi-structured interview form. The data obtained was analyzed using the content analysis method. Codes, categories, and themes were reached through the answers given by the participants. Data analysis determined that the primary demands made by external pressure groups to the administrators of schools with a high image include attempts to enroll students outside the registration area and teacher selection. Other demands made to schools include student enrollment through donations despite no quota, transfer procedures, enrollment of students in need of special education, class changes, ensuring academic success, individual attention from teachers to students, student participation in social activities, renewal of school equipment, presence of security at the school gate, cleanliness of the school, presence of a sports hall in the school, earlier opening and later closing times for the school, and provision of school transportation. Requests mostly come from parents. It has been observed that parents put pressure on administrators through political authorities and public officials to realize their demands. It has been determined that school administrators accepted the legally appropriate requests and rejected the others.

Citation: Yılmaz-Ortadağ, V., & Polat, S. (2025). Views of high-image school administrators on external pressure groups. *Anadolu University Journal of Education Faculty, 9*(1), 76-90. https://doi.org/10.34056/aujef.1481145

1. Introduction

Schools differ from other organizations in interacting extensively with their social environments. Every school has its social environment. While receiving input from this social environment and providing output, it interacts with its environment to a great extent. During this interaction process, schools are affected by and influenced by the external pressure groups around them. School administration plays a leading role in this interaction process. Schools are unique environments where students are provided with knowledge, skills, attitudes, and behaviors aligned with education's aims and fundamental principles. The school was established to reduce the adverse effects of the school environment and to reinforce the positive effects of the environment (Balay, 2014). In this process, the roles and duties of school administrators are important. School administrators are the leaders of the internal elements that will realize the school's goals, keep the school structure alive, and protect the school atmosphere (Bursalıoğlu, 2022). Educational administrators' responsibilities include meeting society's educational needs, ensuring student development, calculating costs and finding resources, predicting and planning future needs, and monitoring and organizing human resources (Taymaz, 2011).

Considering that school success is directly proportional to school leadership, the role of school leadership in the education system is better understood. Compared to other fields and sectors, education and schools are becoming an area that attracts the attention of many people and institutions. Schools are institutions that transfer necessary knowledge, skills, and values. Therefore, many factors, such as public authorities, political parties, non-governmental organizations, religious groups, and the business world, want to influence schools and attach importance to education (Erdoğan, 2000). Organizations that want to develop close relationships with schools can support schools and school leaders to meet their diverse needs, which can create pressure and tension. Pressures and tensions may also arise from the cultural influence of society and local values. All internal and external factors affecting the management of a school are considered pressure groups. Internal elements are the elements that constitute the school and are included in its structure. Managers, teachers, students, civil servants, and other employees. On the other hand, external factors are not part of the school structure but affect it and, therefore, play a role in management. These external factors include parents, professional organizations such as associations, federations, unions, and political and religious groups (Bursalıoğlu, 2022).

When the literature is examined, it is seen that there are a limited number of studies on the groups that put pressure on school administrators, the demands of the pressure groups, and the attitudes of school administrators toward these demands. This study attempted to obtain information about the external demands that school principals face while performing their management duties, the sources of these demands, and the behavior of administrators toward these demands.

1.1. Conceptual Framework

There are different definitions of image in literature. The word image comes from the Latin word imago (image) and refers to the mental and psychological reflection of a person, organization, product, or event in the human brain (Türkkahraman, 2004). In literature, image is also defined as people's positive or negative thoughts about objects, people, organizations, or institutions (Dichter, 1985). Image perception is a subject that is examined at the individual, employee, department, organization, institution, and even system level. Organizational image is the perception of how internal and external stakeholders view and evaluate the organization (Dutton & Dukerich, 1991). In the ever-changing and developing world, the rapid development of technology and science, globalization, and rapid social and cultural changes have led to the emergence of various organizations. Conflict of interest has arisen among many organizations, and to survive and become better known, a competitive environment has been created. Organizations are constantly competing to make more profit, be more popular, maintain their current reputation or be better known, not remain indifferent to the environment and its needs, and be aware of changes and developments (Akbulut, 2015). Like other sectors, the education sector has also become globalized. In the late 20th century, education has become an institution that has begun to compete with its competitors in the competitive environment created by globalization and has been directly affected

by globalization. Undoubtedly, the next step in this struggle is to improve the image of educational institutions. It is no longer sufficient for educational institutions to have a qualified staff or only specific services at the forefront (Duman, 2012). The factors that affect the school image are the professional knowledge, education level, teaching attitudes of teachers; the personality behaviors and work habits of students; school environment, physical facilities, equipment, and atmosphere; school success level, administrative efficiency, student progress and the level of students' placement in university after graduation (Kurşun, 2011).

High-image schools attract talented and experienced people to the organization (Güler, 2001), participate in important projects, are recognized by others, and are reliable as institutions (Erdal & Gücüyeter, 2013). They are respected, reliable, hardworking, and promising institutions with a presence in the public or target audience (Taşkın & Sönmez, 2001). Schools with a high image are preferred institutions due to their positive features. Thus, these are schools where the influence of pressure groups is felt more. With the development of modern democracies, pressure groups, which have an increasing influence on political life, are considered a subtype of social groups that constitute democratic society and have basic characteristics. Pressure groups formed to protect their interests aim to fulfill their wishes by influencing the government (Kapani, 1993). Pressure groups are individuals or communities that come together for a benefit and try to influence power centers to achieve these benefits, either covertly or openly (Kapani, 2007).

Like other organizations, school organizations are influenced by external pressure groups. Political institutions, associations, federations, unions, and foundations are external pressure groups in terms of influencing schools and school administrators (Bursalıoğlu, 2022). In the research conducted by Şenyiğit (2019), it was stated that the pressure groups affecting the school administration are (a) families, (b) bureaucrats and local administrators, (c) commercial structures, (d) tribal and opinion leaders, (e) unions, (f) teachers and other school administrators, (g) local press, (h) political party representatives. The administrators of these schools, who attract the attention of pressure groups within the school environment, are sometimes exposed to the demands of external pressure groups. Pressure groups feel they have common interests within society and work in an organized manner to achieve their goals by influencing public officials (Aybay, 2011). Pressure groups have their characteristics in terms of formation. From this point of view, it can be seen that they do not all have the same purpose and have different perspectives. Pressure groups are generally considered to be two different types. These are groups that focus on shared interests and common attitudes. We can give examples of groups that focus on common interests, such as unions and various professional groups. Groups that gather around common attitudes aim to achieve common goals and ensure unity of ideals, not professional or material interests. Members of such groups may come from different occupations or ethnic groups. Pressure groups can be considered civil elements that influence the public sphere to benefit society or various groups (Şenaras, 2017). This study considered external pressure groups such as political authority groups, parents, public opinion, associations, foundations, and unions.

1.1.1. Political Authority Groups

Turkish public institutions generally act according to various directives from multiple sources. In particular, representatives of ruling parties can form important interest groups in public institutions. The demands and pressures of these groups prioritize individual or group interests over the efficient functioning of the organization. For this reason, local administrators and political authority representatives in the regions where the schools are located put pressure on teachers, school personnel, parents, and especially the education administration. When managers become politicized, the organization they belong to gains a political dimension, and in such cases, managers try to achieve political goals rather than organizational goals (Yiğit & Bayraktar, 2016).

1.1.2. Parents

Families are the group with which school administrators communicate most frequently. Families with parent organizations may have different expectations regarding school management, depending on

their position and evaluations. The biggest problem for schools is that parents pressure school administrators and teachers to line up with their expectations or insist that they be met (Bursalıoğlu, 2022). Some parents may use their position in society or their economic power to put pressure on school administrators and teachers. This pressure varies depending on the parents' profession, education level, and economic power (Yiğit & Bayraktar, 2016).

1.1.3. Public Opinion

The concept of public opinion is the "general judgment" or opinion at a particular point in time about a particular issue that concerns people. However, we should not forget that we can never say that everyone has the same common opinion on any issue. On the contrary, society will have many opposing views regarding the issue in question. On the other hand, although it is often possible to claim that publicly accepted views include views supported by the majority, it is also possible that these views are strongly adopted by a minority (Daver, 1993).

1.1.4. Unions

It is a non-governmental organization established to improve and develop the working and living conditions of education unions, teachers, and other public and private employees and ensure solidarity among them. The general objectives of education unions are to protect and develop the economic, social, personal, and professional needs of education unions and to produce projects that provide a more respectful standard of living for their members (Eraslan, 2012). Unions are active interest groups that play an important role in the operation of schools. Unions assist management through coordination and cooperation to create a competent environment for public employees and solve educational personnel's problems. Therefore, education administrators need to support the development of unions (Bursalıoğlu, 2022). Although unions try to protect the interests of employees, they can sometimes be biased due to their tendency to be biased or take political positions. For this reason, unions organized in education can pressure their interlocutors on issues affecting schools, the education system, and their fields of activity in educational environments (Öztürk, 2013).

1.1.5. Foundations and Associations

Other external pressure groups that affect schools are foundations and associations established for mutual aid. Foundations and associations are pressure groups that influence school administrators to carry out their activities and promotions. There are requests from foundations and associations to advertise themselves in schools, to inform about their activities with posters and brochures, and to organize poetry, book reading, short films, and composition competitions at the provincial level (Özcan, 2014).

Schools are organizations that operate in a complex environment and must respond to the demands of various stakeholders (Coburn, 2004). Institutional theory has been the dominant approach in contemporary organizational studies to understand how organizations respond to their external environments (Greenwood et al., 2008). According to institutional theory, legally established legitimate organizations not only have to adapt to the technical issues in the environment but also have to adapt to the demands and respond to expectations from the sociocultural environment of the school around the organization's rules (Diehl & Golann, 2023).

School administrators should be aware of the school's external environment and know environmental forces and external pressure groups well to manage school-society relations effectively. School administrators should be aware of the overt and covert objectives of environmental forces and external pressure groups outside the school. School principals should look for the right solutions regarding the school's goals and how to balance them (Balay, 2014). If school administrators cannot achieve this balance, they may be influenced by social pressure groups. This situation may prevent administrators from making healthy decisions and may make it difficult for the school to achieve its goals (İnandı, 2014; Şenyiğit, 2019).

Studies examine the effects of external pressure groups on school administrators (Özcan, 2014; Şenyiğit, 2019). However, these studies are not conducted based on the specific characteristics of schools; instead, they are carried out for more general studies. This research focused on examining the impact of external pressure groups on the administrators of schools with high images. School image is an important predictor of parents' behavior. It has been found that parents' interest and loyalty are higher in schools with a higher image (Li & Hung, 2009). While an established and developed school image can improve the school, it can fail if the expectations and needs of the groups that interact with the school (e.g. parents) are ignored (Nguyen & Leblanc, 2001). External pressure groups may influence schools with high images more than other schools because schools with high images attract more attention from society. This research is important in terms of examining the effects of external pressure groups on schools with high images.

1.2. The Purpose of the Research

The research aims to determine what external pressures are on schools with high image, what kind of demands external pressure groups have from school administrators, and to reveal how school administrators behave towards these demands. In line with the overall aim of the research, the following questions were addressed:

1) What are the demands of external pressure groups from administrators of schools with a high image?

2) What external pressure groups make demands on schools with a high image?

3) How do administrations of high-image schools react to the demands of external pressure groups?

2. Method

2.1. Design of the Research

This research was carried out using the phenomenological design, one of the qualitative research methods. Phenomenological research is a research design that seeks to describe phenomena that are commonplace in everyday life but are not fully understood through the exploration of individuals' lived experiences (Yıldırım & Şimşek, 2021). Phenomenological research aims to understand the essence of a phenomenon by exploring the in-depth experiences of individuals who have lived through it (Creswell, 2018). Qualitative research aims to explore the depth of phenomena based on the experiences of individuals (Özdemir, 2010).

2.2. Study Group

The study group of the research was determined by using the homogeneous sampling selection technique, one of the purposeful sampling selection techniques among qualitative research sample selection methods. Purposive sampling is a non-probability sampling approach. Purposive sampling allows for detailed research by selecting information-rich cases based on research objectives and examining one or more specific cases that meet certain criteria or have certain characteristics. Researchers try to understand natural and social events and phenomena in the context of a selected situation and to discover and explain the connections between them (Büyüköztürk et al., 2020).

In the analogous sampling technique, the sample is formed from individuals who have similar experiences with the research problem (Strauss & Corbin, 2014). In selecting participants in the study, schools with a high image were determined by first interviewing district administrators. Interviews were held with 13 school administrators from 30 selected schools. The research participants comprised nine principals and four vice principals working in schools located in the Çayırova, Gebze, and İzmit districts of Kocaeli Province. The descriptive characteristics of the participants are presented in Table 1 below.

Table 1. Descriptive characteristics of participants

Participant	Management Position	School Type	Education Level	Union Information	Professional Seniority	Gender
Manager 1	Deputy Principal	Primary School	Postgraduate	Eğitim-İş	18	Man
Manager 2	Deputy Principal	Primary School	Doctorate	Hürriyetçi Eğitin-Sen	16	Man
Manager 3	Principal	Secondary School	Bachelor	Eğitim Bir-Sen	18	Man
Manager 4	Principal	Secondary School	Bachelor	Eğitim Bir-Sen	43	Man
Manager 5	Deputy Principal	Secondary School	Postgraduate	Türk Eğitim-Sen	17	Man
Manager 6	Principal	High School	Postgraduate	Eğitim Bir-Sen	20	Man
Manager 7	Principal	High School	Postgraduate	Eğitim Bir-Sen	26	Man
Manager 8	Principal	Primary school	Doctorate Student	Türk Eğitim-Sen	34	Woman
Manager 9	Principal	Secondary School	Bachelor	Eğitim-İş	35	Man
Manager 10	Principal	Primary School	Postgraduate	Eğitim Bir-Sen	24	Man
Manager 11	Deputy Principal	High School	Postgraduate	Türk Eğitim-Sen	20	Man
Manager 12	Principal	Primary School	Postgraduate	Maarif-Sen	27	Man
Manager 13	Principal	High School	Postgraduate	Türk Eğitim-Sen	13	Woman

2.3. Data Collection Tools

The data of the research was collected through interview technique. Interview is a commonly used data collection tool in qualitative research. It is an effective technique for obtaining information about individuals' feelings, thoughts, experiences, and complaints (Sevencan & Çilingiroğlu, 2007). The researcher used the semi-structured interview form developed during the data collection process. This form was developed based on literature review and expert opinion and consists of two parts. The first part includes the participant's personal information, and the second part includes the interview questions.

The following questions were asked to the study group for the research:

What kind of demands do you receive from external pressure groups because your school has a high image?

What external pressure groups are making demands because your school has a high image?

How do you react to the demands of external pressure groups towards your school? How do you behave in response to these demands?

2.4. Collecting Data

Interviews were conducted with principals and vice principals of schools requested by parents in Çayırova, Gebze, and İzmit districts of Kocaeli province. Interviews were conducted with participants who volunteered to participate in the study and were audio-recorded with the participants' consent. Participants were informed that their names and identity information would be kept confidential. At the end of the interviews, additional questions were asked to gather more detailed information from the participants. Before the interviews, the interview questions were shared with school administrators for review, and clarifications were provided as needed. Data were collected between October and December 2023. Interviews lasted approximately 20-30 minutes.

2.5. Data Analysis

Qualitative data were analyzed using content analysis, which involves a) coding data, b) identifying themes, c) organizing codes and data, and d) defining and interpreting results. In this technique, similar

information is coded under specific themes to identify them systematically (Yıldırım ve Şimşek, 2021). The data obtained from audio recordings were transcribed into text to create qualitative data. Qualitative data analysis involves categorizing and interpreting data to extract meaning and provide insights into the dataset. The process can also describe and explain structures, processes, or field problems in everyday and practical contexts (Çelik et al., 2020). First of all, the audio recordings were transcribed. The responses given by the managers to the interview questions were coded as M1, M2, M3,... The obtained data were coded and divided into categories and themes. Direct quotes were included to increase credibility in the interpretation of the data.

2.6. Validity and Reliability

Criteria such as credibility, transferability, consistency, and confirmability must be provided to test the validity and reliability of qualitative studies. To increase credibility (internal validity) in qualitative research, techniques such as long-term interaction, expert review, in-depth data collection, participant confirmation, and triangulation are recommended (Lincoln & Guba, 1985). To bolster the study's credibility, expert input was obtained to assess whether the interview questions were aligned with the research objectives. Appropriate environment and time were created for the participants to feel comfortable during the interviews. Interviews were conducted in an environment of trust, and attempts were made to ensure long-term interaction with the participants. Participant confirmation was obtained by repeating what they said from time to time. Data were added or removed based on participants' feedback on whether there was anything they wanted to add or remove. Data were diversified by conducting interviews with participants from different schools and with different characteristics. While analyzing the data, assistance was received from an academician to confirm the analysis. In order to ensure transferability (external validity) in qualitative research, researchers are expected to provide in-depth information. One way to provide in-depth and broad-scale information is to use the purposive sampling technique when selecting a sample (Lincoln ve Guba, 1985). In this study, the homogeneous sampling technique, one of the purposeful sampling techniques, was used to ensure transferability. The opinions of the participants who experienced the subject were used. In addition, the data collection and analysis process were explained in detail in the method section to ensure transferability.

To ensure the research's consistency (internal reliability), extra questions were asked to the participants. It has been observed that similar answers were given to similar questions. The research results were interpreted by comparing them with the information in the literature. To ensure the confirmability of the research (external reliability), the research findings and results were compatible with the data. For confirmability, it is recommended that research findings and results should be based on data and that information not based on data should not be presented. Comments should not be made (Given & Saumure, 2008). To ensure confirmability in the research, direct opinions of the participants were included when interpreting the findings.

Two researchers analyzed and coded the study's data separately to be subjected to the reliability form of Miles and Huberman (1994). They identified codes on which the two researchers reached a consensus and those on which they disagreed. The study's reliability was calculated using the reliability formula [Reliability=(Consensus/Consensus+Disagreement)] developed by Miles and Huberman (1994), which was found to be 80%.

3. Results

3.1. Findings Regarding the Demands of External Pressure Groups on Schools with High-Image

The first question of the research was, "What are the demands of external pressure groups from the administrators of schools with a high image?" To find an answer to this question, the following question was posed to school principals and vice principals: "What kind of demands do you receive from external pressure groups because of your school's high image?" The demands of external pressure groups on schools with a high image were examined in the context of school administrators' views, and they are shown in Table 2 under themes and categories.

Based on the participants' views, the demands from external pressure groups on schools with a high image are grouped under four sub-themes: demands for registration procedures, demands for education and training, demands for school facilities, and demands for the interests of pressure groups.

One of the demands that external pressure groups make on the school administration is regarding registration procedures. These requests have occurred in the form of registration of students whose addresses are outside the registration area, registration of students with donations outside of the quota, transfer transactions, and registration of students needing special education. School administrators have stated that external pressure groups sometimes pressure them to enroll students not residing in the school's student recruitment area. For example, a school manager (M2) stated, "*Even though the address does not match, there is a request to enroll the student. Even though the student's address is not in the registration area, the parents want to register the student to school and intervene with various resources. The director of national education, anyone in the governor's office, religious groups, political party leaders, and even members of parliament are involved and want to register the student for school even though the address does not match. This creates pressure on the administrators. Another demand of external pressure groups on school administration is the desire to enroll students even though the school quota is full.''* For example, M5 drew attention to this issue by saying, *"The image of our school is better than other regional schools, and since we are a school with a vision, there are also more demands. Some offer donations to register students to the school"*.

Table 2. Demands of external pressure groups on schools with high image

Themes	Categories
Requests for Registration Procedures	Registration of students whose address is outside the registration area Student registration outside of quota by donation Student transfers Registration of students with special education needs
Requests for Education and Training Affairs	Teacher preference Class change Ensuring academic success The teacher's special attention to the student Participation of students in social activities
Requests for School Facilities	Renewing school equipment Having security at the door Cleaning the school Having a gym at the school Opening the school earlier and closing it later Providing school transportation
Groups' requests for their own interests	The demand of religious groups to advertise themselves The demand for organizations to organize events in schools

Another issue putting pressure on school management is the registration of students with special education needs. M6 expressed his thoughts on this issue as follows: "We have 18 integrated students in the sixth grade in our school. Integrated students, that is, children with special education needs who have a report, can easily register in many schools. These students can be enrolled in any school they *want to go. Since our guidance service is very active, there has been much demand from children with special education needs."*

The demands for education and training are categorized as teacher preference, classroom change, ensuring academic success, teacher's special attention to students, and students' participation in social activities.

Regarding teacher preference, one of the participants (M1) stated, "*The demands are usually about teacher preference. Our school is successful, and our teachers are successful teachers who are confident in themselves. All of our teachers are hardworking, but some of them have a reputation, and parents focus on those teachers. This situation upsets other teachers and annoys us as the school administration."*

Another participant, M7, said, *"Parents often express their desire for their children to have specific teachers. For instance, they might say, My child is not satisfied with the Math teacher; I would like a different one.'"*

Academic success is another demand that stands out in the theme of demands for education and training. Regarding this request, Manager 6 stated, "*Due to our school's high reputation, parents have the highest expectation that our students will be placed in selective universities upon graduation. The most significant pressure we face arises from this expectation. We feel an inevitable psychological need to place the student, who makes up only three or four percent of enrollment, in a specific university through the university entrance exam.*" Administrator 13 stated, *"First of all, our parents have high expectations of success. Since the students are successful, they do not accept decreased written or performance grades. They constantly question and search on this issue. They especially question the professional experiences and work of the teachers."*

Another request regarding education and training affairs is a change of classroom. M9 drew attention to this issue by saying, "There are many requests for class changes. We have a student behavior evaluation board. They decide together with the guidance service, and if they see a need, we change the student's classroom."

School principals also receive requests for teachers to pay special attention to students. M12 expressed her thoughts on this issue: *"The class mother always wants her child to be taken care of. When the teacher says that she has to treat them equally, she immediately gets upset and tries to create problems."* M8 said: "*The parent always wants her child to attend the programs. For example, we had an incident 2 years ago. An event was going to be held for the Red Crescent week. Our hall has a capacity of 80 people. We said that 4 students from each class should come. The teacher lined up the students in the class for the events. For example, 4 students will attend this week's event, and the other 4 will attend next week's event. The parent started a fight with the teacher about why her child didn't attend the event. She wanted the money she donated to buy a computer for the class back.*" This statement indicated that another request made to the school administration was the student's participation in social events.

Requests regarding the school's physical environment were gathered in the categories of renewing school equipment, having security at the door, having a clean school, having a gym at the school, opening the school earlier and closing it later, and providing transportation services. When Table 2 is examined, it is seen that the most prominent demand regarding the school's physical environment is the demand for security. One participant (M5) said, *"...For example, the expectation of security. We have school security outside. We never let anyone in from outside. We do not let the student out easily. Security is one of the biggest demands of the parents."*

In the theme of groups' demands for their own interests, a participant (M10) in the category of religious groups' desire to advertise themselves said, *"We receive requests from religious organizations and foundations to announce their competitions."* Regarding the organizations' desire to hold events at school, Manager 12 commented, *"Some entertainment organizations also request to hold plays or shows at school."*

3.2. Findings on which pressure groups demand the most from the schools with high image

The second question of the research was formulated as "What are the external pressure groups that demand high-image schools?" To find an answer to this question, the following question was posed to school principals and vice principals: "Which external pressure groups make demands because your school has a high image?"

Table 3 presents the participants' views on which external pressure groups are driving demands for schools with high images.

Table 3. External pressure groups on schools with high-image

Themes	Categories
External Pressure Groups Making Demands	Parents Political Authorities Public Officials

When Table 3 is examined, the sources of the requests are grouped into three categories: parents, political authorities, and public officials.

When asked, “Where do the demands come from?” many participants responded that they came from parents. One participant stated, *“The majority of requests originate from parents. Due to the efficient operation of our guidance service, we also receive inquiries from parents of children requiring special education” (M5).* According to the data analysis, parents request assistance from public authorities, including neighborhood heads, district education directors, provincial education directors, district governors, and governors, to meet their demands. Under this category, administrator 4 expressed his opinions: *“Parents have demands on schools. To meet these demands, parents involve bureaucrats, education directors, representatives of political parties, local governments and municipalities officials, and even authorities from different provinces at the provincial level.”* Manager 8 stated, *“Many of the requests we receive at our school come from our parents. In addition to parents, we also receive requests from district governor's office staff, hometown associations, the village head, provincial and district national education directorates, members of political parties, education unions, and businessmen from time to time”*. It has been observed that parents have attempted to involve political authorities to fulfill their demands. For example, M3 stated, *“I have received calls from parents, as well as from the highest levels of bureaucracy, including the Deputy Minister of National Education. I have received two calls from ministry advisors. I have also received requests from the local Member of Parliament, the district mayor and his deputies, the mayor of a neighboring district, and even our district governor.”* Manager 9 remarked, “*The requests originate from parents. Parents are seeking the assistance of various individuals to meet their demands. These individuals include presidential advisors, members of parliament, mayors, city council members, and political party leaders. There is no pressure but requests are being made”*

3.3. Findings on the Responses of Administrators of Schools with High Image to the Demands of External Pressures

The study's third question is: “How do school administrations of schools with high image behave when faced with demands from external pressure groups?”. To answer this question, school and vice principals were asked, 'How do you respond to demands from external pressure groups on your school? What behaviors do you exhibit when you are faced with these demands?

Table 4 categorizes participants' responses regarding their behaviors when confronted with demands placed on schools with a high image.

Tablo 4. Reactions of school administrators to demands

Themes	Categories
Behavior in Response to Requests	Fulfillment of the Request
	Opposition to Request

The behaviors displayed in response to demands have been classified into two categories: Fulfilling the demand and opposition to the demand. Under the "fulfilling the demand," M5 commented, "Of course, these demands tire us out, as they are outside our work and *field. However, we try to meet these demands within the limits of the national education system, the school's resources, and the environmental conditions."* Similarly, M1 expressed his thoughts: "*We examine the requests from our parents. We try to contribute as much as possible in areas where we can help them."*

It was determined that managers declined non-compliant requests with rules and regulations. Manager 3 expressed his stance on this issue:

> "Since the number of students is determined based on the classroom size, we have never encountered any problems with student admissions. From the first day we opened, we have never admitted any students through favoritism, money, or other means. Manager 7, on the other hand, stated, "They try to involve political party members and bureaucrats. No matter where the request comes from, we do not compromise on student admissions. Those who exceed the absenteeism limit want their absences to be excused, but we do not deviate from the regulations in this matter. If they can prove their excuse, we act to prevent losing the student."

4. Discussion and Conclusion

When considering the effects of external pressure groups on schools, the diversity of these groups and their methods of influence can be quite decisive. Pressure groups can influence school decision-making processes from a variety of perspectives, and this can have significant implications for education, society, and the economy. However, it should not be forgotten that not all of these effects are destructive or negative. External pressure groups in schools are usually formed around various concerns and interests. For example, these groups may focus on personal interests such as economic or student needs or broader societal issues like education, social, economic, and political matters. These groups may attempt to influence school administrators through communication, education, persuasion, or propaganda. However, this influence is generally proportional to the content and characteristics of the situation. In other words, the activities of pressure groups are not always negative or destructive. In particular, bureaucracy, families, public opinion, unions, and other factors are among the groups that influence school administration (Önk et al., 2023). These factors play a significant role in influencing decision-making processes within schools. However, this situation must be balanced with the need for transparency and accountability. In his 2015 study, Liljenberg examined the relationship between the school environment, external stakeholders, and other local organizations using the institutional theory framework. Within this framework, he highlighted the necessity for the school to conform to the pressures exerted by its external environment. In this process, the importance of school administration considering accountability and democratic principles has been emphasized.

According to the results of the interviews conducted as part of the research, the most common demands made by external pressure groups on school principals were related to education and teaching activities. These were followed by requests concerning enrollment procedures, demands regarding school resources, and demands directly benefiting the pressure groups themselves. It has been concluded that the most prominent demands related to education and teaching are focused on teacher selection and improving academic achievement. It was observed that there were requests to enroll students who reside outside the designated school district in the category of enrollment-related demands. In this sense, it resembles the findings of Şenyiğit's (2019) study. The presence of security guards at the entrance is among the leading demands related to school resources in educational institutions.

According to administrators, when examining the demands of external pressure groups on schools with a high image, the request for teacher preference has been frequently emphasized. According to administrators, the fact that some teachers become more popular than others leads to a preference among some students and parents. In terms of student enrollment and quotas, enrollments made through political influence or connections can exert pressure on school administrations. Enrollments outside the designated area or special preferences can sometimes affect enrollment and create bureaucratic difficulties. Demands for enhanced security are at the forefront of parental concerns, leading schools to prioritize external security measures and student safety. The various demands and interactions faced by educational institutions are among the issues that school administrations must carefully consider. According to Liljenberg (2015), school principals act as integrative leaders who mediate between the demands of external pressure groups and the internal values of the school. Consequently, establishing transparent policies by school principals concerning teacher selection, student enrollment, and security, coupled with their fair adjudication of these matters, can significantly contribute to the health and equilibrium of educational institutions.

In this study, which examined the views of the administrators of schools with high external pressure groups, it was seen that the external pressure groups affecting the school administration were parents, bureaucrats, local administrators, and political party representatives. This classification is similar to the classification obtained in the studies conducted by Şen and Anar (2022). Unlike these studies, the school principals interviewed stated that unions are no longer a pressure factor as they used to be. In schools with a high image, parents play an active role in making their demands on the school. Parents tend to direct school administration, especially in line with their expectations regarding their students' education. Parents' primary concerns center around their children's demands and expectations related

to their education and school life. When parents' demands are not met, it has been observed that they exert pressure on school administrations through local politicians and political figures (Özcan, K. 2014). Individuals or institutions with political connections can influence enrollment processes, teacher selection, and the decisions of schools with high image. This situation can create pressure on school administrators at various levels. It is sometimes stated that these expectations, particularly specific ones, create pressure and vulnerability for school administrators. (Vandenberghe, 1998). By issuing a directive in 2024 to determine first-grade classes and teachers in primary schools and fifth-grade classes in middle schools through e-Okul, the Ministry of National Education aimed to eliminate external pressures on school administrators regarding these matters. In this way, the Ministry of National Education has developed a system that eliminates the authority and influence of school administrators in selecting teachers and assigning students to classes. The Ministry of National Education has added a module to the e-Okul system that automatically assigns students to classes and teachers. Implementing this module is intended to neutralize external pressures exerted by interest groups on school administrators regarding assigning students to classes and teachers.

Coburn (2004) categorizes approaches to external pressures into five main headings: rejection, segregation, parallel institution building, assimilation, and accommodation. As a result of this research, it was found that school administrators adopted two main approaches: fulfilling requests and opposing them. Rejecting a request can be considered as compliance. Opposing to accept the request can be considered rejection. The approaches of segregation, parallel institution building, and assimilation, proposed by Coburn (2004) as responses to external pressures, were not observed in this study. When examining the behaviors of managers in response to requests, it was observed that they were particularly strict in terms of treating individuals with favoritism. This attitude demonstrates a stance against student registrations and recruitment through favoritism or external factors. While adhering to laws and maintaining impartiality, there is a strong emphasis on resisting external pressures and avoiding deviating from established rules. On the other hand, under the theme of 'fulfilling requests,' a flexible approach is taken depending on the source and nature of the requests. This approach is characterized by examining the demands and trying to meet them within the possibilities. The process of coping with demands in educational institutions is shaped by different stances and approaches. Various factors, such as adhering to the law and impartiality, resisting pressures, and also examining and meeting demands within the means, determine how the school administration approaches demand. This situation highlights the importance of flexibility, fairness, and transparency in management and policy-making in education. In this context, demonstrating a balanced and fair approach to demands can ensure educational institutions operate in a healthier environment. According to Vandenberghe (1998), meeting the demands of external pressure groups is the responsibility of the school administration under the psychological contract. When meeting the demands, the demands of the school and the pressure groups must be balanced. Liljenberg (2015) emphasized the importance of accountability in meeting the demands of external pressure groups.

Demands from external pressure groups on schools with high images should be evaluated within the principle of legality in management. Meeting legal demands that do not harm the school will strengthen school-community relations. Addressing the demands of external pressure groups within an ethical framework by school administrators will contribute to balancing the demands of these groups with the school's operational system. Developing legislation to prevent those in political power from making non-compliant demands on school administrations will facilitate the work of school administrators. Training school administrators to approach external pressure groups will help them overcome implementation challenges. The impacts of external pressure groups on schools with high images can be investigated through quantitative research. The impact of gender of school administrators in schools with high image on fulfilling the demands of external pressure groups can be examined. Internal pressure groups in schools with high image, their demands, and impacts can be examined.

Statement of Researchers

Researchers' contribution rate statement:
Both authors contributed equally to the present study.
Conflict statement:
The authors declare that they have no conflict of interest.
Data Availability Statement:
The data supporting this study's findings are available on request from the corresponding author. However, the data are not publicly available due to privacy or ethical restrictions.
Funding:
This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.
Ethical Considerations:
This research was approved by the Kocaeli University Ethics Committee's Social and Human Sciences Ethics Committee's decision, No. 23, dated 14/12/2023.
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ANADOLU UNIVERSITY

AUJEF
Anadolu University Journal of Education Faculty
aujef.anadolu.edu.tr

2025, 9(1), 91-100
Print ISSN: 1300-5448
Online ISSN: 2602-2249

REVIEW ARTICLE OPEN ACCESS

Foreign language teaching and teacher training policies from the Ottoman period to the present†*

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† This research extends a study presented at the 9. International Eurasian Educational Research Congress (2022).
* This review research did not collect data from humans. The primary source of data is documents. Therefore, ethics committee permission was not required.

Article Info
DOI: 10.34056/aujef.1489386
Article History:
Received: 24/05/2024
Revised: 29/08/2024
Accepted: 21/11/2024
Keywords
Foreign language teaching,
Foreign language teacher education,
History of foreign language teaching in Türkiye,
The National Education Council.

Highlights:

- Historical analysis of foreign language teaching policies from the Ottoman Empire to modern Türkiye.
- National Education Councils' and National Development Plans' role in foreign language education policies.
- Foreign language teacher training practices and their evolution within national policy frameworks.
- The impact of globalization on Türkiye's foreign language education policies and teacher training.
- Assessing policy changes, National Councils, and Development Plans' effectiveness.

Abstract

This study focuses on foreign language teaching and foreign language teacher education in Türkiye since the mid-19th century, when the renewal movements in the Ottoman Empire began. It examines foreign teaching and foreign language teacher training policies and practices, starting from the Tanzimat when the westernization studies of the Ottoman Empire began to the present. The study aims to contribute to the field of Foreign Language Teaching Education by examining the periods of foreign language teaching and teacher training policies and practices in foreign language teaching and foreign language teacher training. In terms of the objectives of the study, as one of the qualitative research methods, the document analysis method was chosen, and documents published by the Council of Higher Education (YÖK), the Ministry of National Education (MONE), the Board of National Education and the Board of Education, Official Gazettes, National Education Councils and Development Plans of Türkiye were studied in detail. Sections related to foreign language teaching and foreign language teacher training policies in these resources are included in the study chronologically. In the National Education Councils examined, decisions were made to solve the teacher shortage rather than teacher education.

Citation: Tokçalar, F. (2025). Foreign language teaching and teacher training policies from the Ottoman period to the present. *Anadolu University Journal of Education Faculty, 9*(1), 91-100. https://doi.org/10.34056/aujef.1489386

1. Introduction

In education, English language learning and teaching—perceived by policymakers as a prerequisite for increasing job opportunities for individuals and enhancing countries' chances of adapting to the global economy—has become a prevalent feature of formal education programs worldwide (Cha & Ham, 2008). It is assumed that by developing foreign language learning skills, students from low socioeconomic statuses can respond to the demands of a globalized society, improve their living standards, and thus achieve better income in the future (Nunan, 2003). This situation applies to Türkiye, as it does in all countries worldwide. Language teaching and learning have been important in Türkiye since the Ottoman Empire. The countries associated with the Empire strongly influenced the selection of foreign languages taught. People living in these territories have always tried to learn the languages of the nations they interacted with.

In the literature reviews conducted in Türkiye, the concept of a foreign language is often confused with that of a second language. Klein (1984, p. 31) explains this: "A second language is one that the learner acquires after or alongside the first language, uses to communicate with others, acquires within their social environment, and speaks." Accordingly, a second language is learned in addition to the native language in multilingual societies and is acquired in the social environment. On the other hand, a foreign language is learned only in lessons and is not used in daily communication alongside the native language in the context of the countries where it is spoken (Klein, 1984). From this perspective, all languages taught in schools in Türkiye are foreign languages, not second languages.

With the proclamation of the Republic in 1923, Türkiye transitioned from a 600-year-old imperial and Islamic state order to a republican regime. Under the leadership of Mustafa Kemal Atatürk, the founder of the Republic, the first serious steps toward Westernization were taken with reforms initiated in law, politics, economics, and education. The reforms led by Atatürk, particularly in education, contributed to forming a European identity within the Turkish Republic (Aytaç, 1984). This study, which examines foreign language teaching and foreign language teacher training in Türkiye from the Tanzimat and Islahat Edicts of the Ottoman Empire to the present, aims to provide in-depth information about the processes involved in training foreign language teachers, reveal the historical policies of foreign language teacher training, and chronologically outline the stages of foreign language teacher training.

2. Method

This research, which examines the process of foreign language teaching and foreign language teacher training in Türkiye, is a qualitative study utilizing the document analysis technique. In other words, the research method employed in this study involves the document analysis method, encompassing the analysis of materials written about foreign language teaching and teacher training policies and practices in Türkiye (Yıldırım & Şimşek, 2016).

Various sources have been used in this study to analyze the process of English teaching and English teacher training in Türkiye. Documents published by the Council of Higher Education (CoHE), the Ministry of National Education (MoNE), the National Education Council, and the Board of Education and Discipline are the primary sources of the policies and decisions made on this subject. Additionally, decisions made at the National Education Councils held between 1939 and 2010 were among the analyzed documents. These documents shed light on how English teaching and teacher training policies have evolved and changed over time. Another source of this study is the *Tebliğler Dergisi* (Official Journal of MoNE) and the *Resmî Gazete* (Official Gazette). These publications include official regulations and ordinances that have been enacted. Regulations related to English teaching and teacher training processes are contained in these publications. Keywords such as "foreign language, foreign language teaching, English teaching, English teacher" were searched, and the relevant parts of these studies were included in the research. Türkiye's development plans are also among the sources of this study. The Five-Year Development Plans prepared between 1963 and 2018 outline the country's educational policies and goals. These plans demonstrate how English teaching and teacher training processes align with development policies and provide valuable resources for this study.

3. Results

3.1. History of Foreign Language Education in Türkiye

The Turkish population's foreign language learning level under Ottoman rule never achieved the desired outcomes. Despite Arabic being taught for centuries in Ottoman madrasas, only a few Turks became proficient in writing and speaking Arabic. Following the conquest of Istanbul and its establishment as the capital, the Ottoman Empire's diplomatic relations with other nations increased significantly. While knowledge of foreign languages was important for drafting treaties and correspondence, appointing ambassadors, and providing them with interpreters and advisors, the Ottoman Empire, preoccupied with military conquests, did not prioritize foreign language learning.

Initially, embassies within the Ottoman administrative center and translators known as *dragomans* assigned to foreign missions were primarily converts to Islam or members of the Ottoman Greek community, later referred to as *Phanariots*. For nearly four centuries, due to the absence of Turks proficient in foreign languages, the Empire's diplomacy was dominated by Greeks, Armenians, and Jews. After the Greek War of Independence in 1820, the importance and necessity of foreign language learning among Ottoman state officials and academics became evident. The Babıâli Translation Office emerged as the first language school in this context.

Foreign language courses were incorporated into schools' curricula like the *Naval College (Bahriye Mektebi)*, established in 1773, and later institutions (Ergin, 1977). Despite numerous efforts to teach Western languages, very few Muslim Turks could write or speak them fluently. Consequently, European commanders were often employed in the military's leadership roles and technical innovations, communicating their instructions via interpreters (Lewis, 1962). With the proclamation of the Tanzimat reforms (1839-1876), modernization and Westernization efforts in education began, first appearing in military schools. French was the first Western language introduced into these schools' curricula (Ergin, 1977). French was later adopted across other disciplines, notably in *The Imperial School of Medicine (Mekteb-i Tıbbiye)*, where it became the primary medium of instruction.

In 1855, the *Mekteb-i Osmanî* (the School of Ottoman) was established in Paris to give Ottoman students a high school education delivered by French and Turkish teachers. Students then continued their education in French military schools. However, this institution and other military schools that offered French courses failed to produce enough French speakers (Ergin, 1977). 1867, during Sultan Abdülaziz's visit to France, the French Minister of Education presented an educational program for the Ottoman Empire. As a result, numerous changes were implemented, including the opening of *Galatasaray Sultanisi (*Galatasaray Imperial High School), also known as *Mektebi Sultanî*, a high school modeled after French high schools where French was the primary language of instruction. This school became a notable success, with its teachers predominantly French nationals (Ergin, 1977).

3.1.1. Language Policies During the Republican Era

With the founding of the Republic of Türkiye on October 29, 1923, a new era began for foreign language education. Western nations were adopted as role models, and the practices of countries such as France, Germany, England, and Italy inspired educational reforms. Mustafa Kemal Atatürk, the founder of the Republic, emphasized the importance of translating foreign texts into Turkish, believing that accurate comprehension of these texts required reading them in one's native language (Ekmekçi, 2003). Thousands of critical texts were translated into Turkish during his era, shaping the goals of foreign language education around translation skills.

Under Atatürk's leadership, Arabic and Persian were removed from school curricula, and Ottoman Turkish was replaced with a more straightforward and comprehensible form of Turkish. However, university students were still required to learn Arabic and Persian to study historical texts, and these languages were reintroduced as mandatory subjects. Attempts to train foreign language teachers began in 1938-1939 when the Ministry of Education converted a building in Istanbul into a school for training foreign language instructors. Students completed one year of training in Türkiye before spending another

year in the target language's native country to become proficient in English, French, or German. Unfortunately, World War II disrupted this initiative, leading to the school's closure in the 1943-44 academic year (Ergin, 1977).

3.1.2. Developments in the Late 20th and Early 21st Century

The year 1997 marked a turning point in foreign language education in Türkiye. The Ministry of National Education (MoNE) introduced significant reforms, collaborating with the Council of Higher Education (CoHE) on the *National Education Development Project*. This initiative extended mandatory education from five to eight years and introduced English courses in the fourth and fifth grades. The goal was to expose students to English at an earlier age and make English a mandatory 35-hour weekly subject (Küçükoğlu, 2012).

In the 2012-2013 academic year, the *4+4+4* education system was introduced, starting English instruction in the second grade in public schools, while many private schools began offering English at the preschool level. The system aimed to strengthen foreign language education at all levels, from primary to higher education. Foreign language education in Türkiye, particularly English, has become crucial to adapting to global advancements in science and technology and maintaining effective communication in international trade (Demirel, 2007). While significant progress has been made, challenges such as teacher training, curriculum development, and effective implementation remain critical focus areas.

3.2. Policies and Practices for Foreign Language Teacher Training

The Republic of Türkiye, prior to the 1930s, addressed its need for foreign language teachers by accepting individuals proficient in foreign languages as foreign language teachers (Gatenby, 1947). These teachers consisted of high school graduates who taught foreign languages. At the same time, individuals who had completed short-term introductory teacher training programs or studied philology were also accepted as teachers, but with the increasing number of students, the necessity of formal training in foreign language teaching emerged. Efforts related to training German, English, and French teachers gained momentum starting in 1938 because institutions like Galatasaray Imperial High School, foreign language schools, and philology departments could not produce the required number of foreign language teachers.

Upon the invitation of Atatürk, John Dewey came to Türkiye and prepared two reports evaluating the Turkish education system. Dewey proposed redefining the education system, improving teacher training, transforming schools to serve as community centers, enhancing hygiene in schools, and improving discipline management (Dewey, 1929; Küçükoğlu, 2012). Based on Dewey's recommendations, the *Gazi Middle Teacher Training School and Pedagogical Institute* began operating in Konya in 1925. They were moved to Ankara two years later after its building was completed. This institution was renamed the Gazi Education Institute in 1976, its education duration was extended to four years in 1980, and it was renamed the *Gazi High Teacher Training School*. Finally, in 1982, it was incorporated into Gazi University under the name *Gazi Faculty of Education*. In the following years, significant efforts were made in Türkiye in the areas of English teaching and English teacher training, and to align English language education with European Union standards, discussions, and advisory decisions were made at National Education Councils and in development plans (Ataünal & Özalp, 1977).

3.3. National Education Councils

Several recommendations were made to train foreign language teachers during the 1st National Education Council convened in 1939. It was proposed to recruit graduates from teacher training schools into foreign schools in Istanbul, make the most of the Foreign Languages School at Istanbul University, and provide scholarships for students in the French, English, and German Language and Literature departments at Ankara University's Faculty of Language, History, and Geography (Ataünal & Özalp, 1977, p. 143). Additionally, decisions were made to prioritize talented graduates of teacher training schools for foreign language education at German, French, and American colleges and allow these graduates to study

abroad for one year. Two years after this council, in 1941, the French Department was established for the first time to train foreign language teachers. The English Department began accepting students in the 1944-1945 academic year, and the German Department started in the 1947-1948 academic year.

At the 2nd National Education Council (1946), it was proposed that departments in several educational institutes be established to train teachers for middle school foreign language courses. To improve the quality of foreign language teacher training, this proposal was approved during the 4th National Education Council, leading to the establishment of foreign language branches in educational institutes in Istanbul, İzmir-Buca (1968-69), Bursa, Eskişehir, Erzurum, Konya, and Diyarbakır. Efforts to train foreign language teachers increased with the growing number of students, and discussions and decisions on this issue were made at various National Education Councils.

At the 4th National Education Council (1949), it was decided to extend the duration of foreign language teacher training programs in education institutes to three years. This decision was implemented in the 1960-1961 academic year.

During the 7th National Education Council, held from February 5 to 15, 1962, it was determined that the two-year training program for middle school teachers at education institutes was inadequate. To resolve this, the commission agreed to extend the training period for foreign language departments at these institutes to three years. Additionally, the council proposed the establishment of more high schools and colleges focused on foreign language education, particularly in the eastern provinces. It emphasized the need to train teachers capable of teaching foreign languages at these institutions. These proposals were approved as presented. The 8th National Education Council (1970) convened between September 28 and October 3. During this time, a recommendation was made to include foreign languages as elective courses in middle schools. Additionally, it was proposed to remove the term "college" from the names of schools, except for those providing instruction in foreign languages.

During the 9th National Education Council in 1974, discussions were held for the first time on subjects such as the existing foreign language programs and their curricula, leading to a reorganization of lesson hours. As part of the decisions made, foreign languages became elective courses for secondary school students. School principals were given the authority to form foreign language classes at A, B, or C levels when needed, with students placed into these levels based on their proficiency. Upon graduation, students' foreign language proficiency levels could be noted as A, B, or C on their transcripts. It was also decided that foreign language education in Türkiye would proceed under the "Foreign Language Teaching Development Project" framework organized by the Council of Europe. The 12th National Education Council, held from June 18 to 22 1988, significantly focused on foreign language education. One of the outcomes of this council was the establishment of a Turkish and Foreign Language Education and Training Commission.

The 12th National Education Council (1988) convened between June 18-22, and foreign language education was addressed extensively during this council. The Turkish and Foreign Language Education and Training Commission was established based on the decisions made. According to this commission, the reasons for failures in foreign language education included students' lack of understanding of the importance of foreign languages, the absence of technological tools to support foreign language learning in most schools, physical constraints that prevented arranging classrooms in U or O shapes during lessons, the neglect of foreign language courses due to university entrance exam concerns, and the focus on imparting knowledge rather than communication in lessons.

At the 12th National Education Council, it was also decided to establish a "Foreign Language Center" to coordinate foreign language education starting in the 1988-*1989* academic year and transition to a "Step-by-Step Course System," where students would receive education based on their foreign language levels. Collaborating with the Council of Europe and related countries, it was decided to organize practical in-service training seminars for foreign language teachers. Moreover, to promote and develop foreign language education, it was decided to enhance short- and long-term student and teacher exchange programs between Türkiye, other countries, and international organizations.

During the 15th National Education Council, held between May 13-17, 1996, it was decided to implement an eight-year uninterrupted primary education program. It was recommended that primary education consist of eight-year schools offering uninterrupted education, that secondary education be based on primary education, and that secondary education include at least three years of instruction following preparation. Additionally, during this council, it was recommended to discontinue the teaching of science, mathematics, and vocational courses in foreign languages, as there was a general perception that students graduating from schools teaching these subjects in foreign languages performed poorly in university entrance exams. As a result, it was recommended that foreign language instruction be offered as a separate course in secondary education and that teachers be provided with opportunities to receive training abroad.

During the 17th National Education Council, held between November 13-17, 2006, recommendations were made regarding improvements to the Turkish education system within the framework of Türkiye's European Union membership process. The 17th National Education Council also addressed foreign language education from this perspective. In this context, it was proposed that national education policies be created to support and develop lifelong learning and make foreign language teaching methods more active and productive. Additionally, it was recommended that foreign language education centers be established in different regions of Türkiye so that all civil servants can learn English and emphasize foreign language education and globalization within the framework of the European Union membership process. Furthermore, it was proposed to support teachers in improving their communication skills in foreign languages through training programs.

3.4. Türkiye's Development Plans

In addition to the National Education Councils, the five-year development plans included various decisions regarding foreign language teaching and teacher training. The first five-year development plan (1963-1967) stated that teachers studying abroad must have a good command of the foreign language they would study in. It was also noted that personnel who did not possess the required level of foreign language proficiency would benefit only minimally from such education abroad. To address this issue, a Foreign Languages School was established in Ankara.

In the third five-year development plan (1973-1977), to fully utilize the technical assistance programs provided by the European Union Commission, the existing *State Language Course* was transformed into the *State Foreign Language Education Center*. This center was tasked with meeting the needs of public personnel in foreign languages.

In the fifth five-year development plan (1985-1989), it was decided to increase the emphasis on foreign language courses at all levels of education, both as elective and graded courses. Programs were to be developed, and necessary measures were taken to meet the demand for teachers. Other decisions included encouraging foreign language instruction in certain fields in higher education, providing the required resources for academic staff to improve their foreign language skills at universities, and transforming universities into centers capable of implementing these measures.

The sixth five-year development plan (1990-1994) concluded that anticipated developments in higher education's economic and social structure, technological advancements, and Türkiye's European Union membership process necessitated prioritizing foreign language education. Decisions were made to prioritize English education in computer science, industrial engineering, informatics, teaching, health sciences, and electrical electronics. English instruction would also be prioritized based on demand in disciplines like management sciences, business, and international relations.

The seventh five-year development plan (1996-2000) included decisions to achieve school enrollment rates of 16% in preschool education, 100% in eight-year compulsory basic education, 75% in secondary education, and 31% in higher education (19% in formal education). Foreign language instruction across all levels of education would be restructured, emphasizing effective foreign language teaching over teaching other subjects in foreign languages. The focus was shifted to creating environments enabling individuals to learn a foreign language effectively.

The eighth five-year development plan (2002-2005) stipulated preparations to extend compulsory basic education to 12 years. Additionally, it was decided to prioritize creating environments conducive to effective foreign language learning at all levels of education rather than teaching other subjects in foreign languages.

The ninth five-year development plan (2007-2013) included measures to address the need for academic staff, especially in newly established universities. It was decided to enable students to participate in domestic and international academic staff training programs. Other measures included improving foreign language teaching to train the workforce needed during the transition to an information society and expanding methods that would allow information and communication technologies to be used effectively in lessons.

Finally, the tenth five-year development plan (2014-2018) emphasized starting foreign language education earlier and developing programs to ensure citizens acquire proficiency in at least one foreign language. The plan also aimed to increase the number of individuals with advanced foreign language proficiency and internationally recognized certifications, especially in the finance sector.

4. Conclusion and Discussion

As Monaghan and Hartman (2002, p. 33) state, "History is a vital indicator of the maturity, vitality, and growing self-awareness of any community, providing a foundation for a collective sense of direction and purpose" (Monaghan & Hartman, 2002, p. 33). Since the Tanzimat period, based on decisions made in areas such as economics, diplomacy, educational councils, official bulletins of the Ministry of National Education, National Education Councils, and Five-Year Development Plans, it has generally been desired for citizens to possess strong proficiency in a foreign language across the four language skills (speaking, writing, listening, and reading).

Foreign language teaching and teacher training policies began during the Ottoman Empire and became more systematic during the Republican era. During the Tanzimat period, priority was given to teaching Western languages such as French, German, and English, and these languages were expanded in military and civilian schools. In the late Ottoman period and the Republic's early years, foreign language teaching played an important role in efforts to strengthen relations with the West and achieve modernization.

In the Republican period, foreign language teaching and teacher training policies were shaped through National Education Councils and Development Plans. Beginning with the first National Education Council in 1939, many decisions were made regarding foreign language teaching and teacher training, leading to improvements in foreign language education. Notably, after 1946, educational institutes that trained foreign language teachers were established, and the duration of education at these institutes was extended.

The Five-Year Development Plans also significantly influenced foreign language teaching and teacher training. Since the first development plan, foreign language teaching has been an essential part of educational policies, with various measures taken to address teacher shortages and improve foreign language education. In particular, after the 1980s, several reforms were implemented to align foreign language teaching with European Union standards.

The findings from the documents examined in this study demonstrate that Turkish state authorities have been actively working on foreign language teaching for a long time. The content of the National Education Councils and Development Plans included items related to English teaching or teacher training and important decisions concerning the teaching and teacher training processes for other foreign languages. Languages such as French, German, and Arabic were also part of these processes. The decisions focused more on quickly reducing the existing teacher shortage than on improving foreign language teacher training programs.

As a country close to European Union membership, Türkiye must comprehensively review the efforts from the Ottoman Empire to the present and learn necessary lessons from past mistakes. A critical review process should be undertaken by conducting a detailed analysis of past decisions and evaluating

their effects and outcomes. Thus, the historical knowledge and experiences gained will contribute not only to foreign language education and teacher training policies but also to developing new and effective strategies in areas ranging from education to diplomacy and economics to technology. This historical perspective should form the foundation for policies that strengthen Türkiye's internal dynamics and international relations.

In summary, this study, which examines the process of foreign language teaching and foreign language teacher training in Türkiye, has compiled information from various sources using the document analysis method. The study reveals how foreign language teaching policies and practices have evolved and developed over time. Since the Tanzimat period, teaching foreign languages in Türkiye has been closely linked to modernization efforts. The findings of this study highlight the evolution of language education policies, from Ottoman attempts to address teacher shortages to modern initiatives aligning with European Union standards.

Statement of Researcher

Researchers' contribution rate statement:
Ferda Tokçalar: Conceptualization, methodology, software, investigation, validation, writing—original draft preparation, writing—review and editing, data curation.

Conflict statement:
The author declares that they have no conflict of interest.

Data Availability Statement: The data supporting this study's findings are available from the corresponding author upon reasonable request.

Funding:
This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

Presentation(s) or Awards at a meeting:
This research extends a study presented at IXth International Eurasian Educational Research Congress (2022)

Ethical Considerations:
This review research did not collect data from humans. The primary source of data is documents. Therefore, ethics committee permission was not required.

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