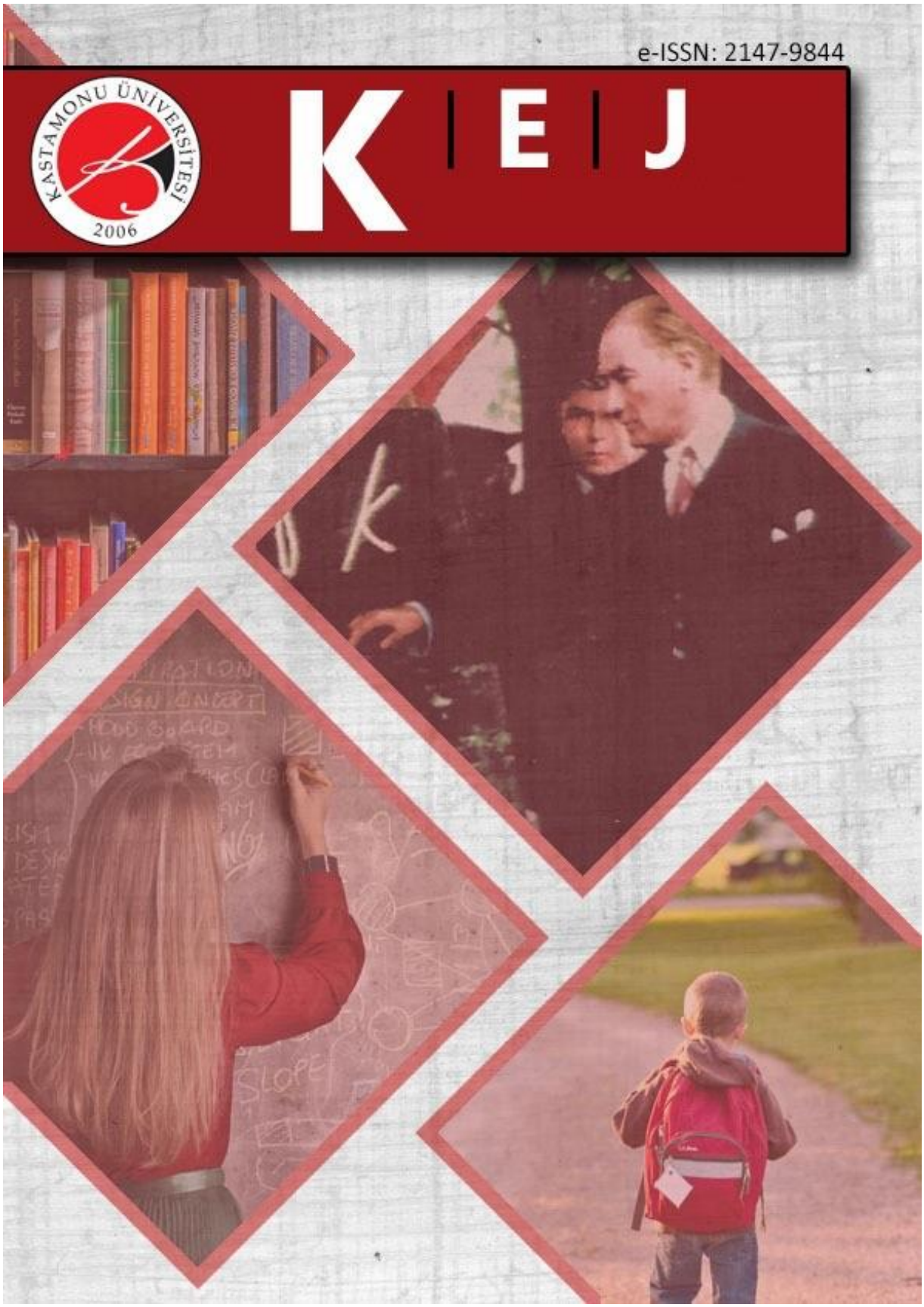

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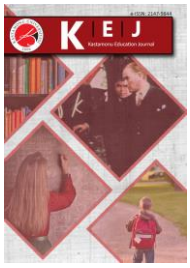

| Research Article / Araştırma Makalesi |

To Emerge or Not to Emerge? A Qualitative Inquiry on Basic Needs of Emerging Adults During the COVID-19 Pandemic

Belirmek ya da Belirmemek? COVID-19 Salgını Sırasında Beliren Yetişkinlerin Temel İhtiyaçları Üzerine Nitel Bir Araştırma

Alper Karababa[1], **Halil Emre Kocalar** [2], **Arca Adıgüzel**[3]

Keywords
1.Covid-19
2.Needs
3.Emerging adults
4.Mental health
5.Qualitative method

Anahtar Kelimeler
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Abstract

Purpose: This study explores the experiences of Turkish emerging adults during the early months of the COVID-19 pandemic as regards their needs.

Design/Methodology/Approach: In this context, 20 participants (10 males and 10 females) were recruited (March to April, 2020) using purposive snowball sampling in a phenomenological design. Data were collected via semi-structured online interviews and analyzed using interpretative phenomenological analysis.

Findings: We have explored several of the needs experienced by the participants (self-allocation, relational, physiological, career and physical). We also discovered some barriers (relational, physiological, educational, environmental, personal and financial) and facilitators (social support, technological support, physical facilities, educational support and personal traits) to address their needs. We finally asked what they do in order to fulfill their needs (behaviors for building relationships, behaviors for self-allocation, behaviors for career development, behaviors for physical health)

Highlights: In light of the findings, It is important to design intervention studies regarding mental health problems that may arise due to emerging adults not being able to meet their needs during the Covid-19 period. In addition, it is recommended that steps be taken in line with the needs of emerging adults by taking into account the findings of this study in the face of possible situations that may be encountered similar to the Covid-19 period.

Öz

Çalışmanın amacı: Bu çalışma, COVID-19 salgınının ilk aylarında Türkiye'deki beliren yetişkinlerin ihtiyaçlarına ilişkin deneyimlerini araştırmaktadır.

Materyal ve Yöntem: Bu bağlamda, 20 katılımcı (10 erkek ve 10 kadın), fenomenolojik bir tasarımda amaçlı kartopu örneklemesi kullanılarak çalışmaya dahil edilmiştir (Mart-Nisan, 2020). Veriler yarı yapılandırılmış çevrimiçi görüşmeler yoluyla toplanmış ve yorumlayıcı fenomenolojik analiz kullanılarak analiz edilmiştir.

Bulgular: Katılımcılar tarafından deneyimlenen ihtiyaçların bir çoğu (kendine zaman ayırma, ilişkisel, fizyolojik, kariyer ve fiziksel) keşfedilmiştir. Ayrıca, ihtiyaçlarının karşılanmasına yönelik bazı engelleri (ilişkisel, fizyolojik, eğitimsel, çevresel, kişisel ve finansal) ve kolaylaştırıcıları (sosyal destek, teknolojik destek, fiziksel olanaklar, eğitim desteği ve kişisel özellikler) ortaya çıkardık. Son olarak, ihtiyaçlarını karşılamak için ne yaptıklarıa ilişkin deneyimleri belirlenmiştir (ilişki kurma davranışları, kendini zaman ayırma davranışları, kariyer geliştirme davranışları, fiziksel sağlık davranışları)

Önemli Vurgular: Bulgular ışığında, Covid-19 döneminde ortaya çıkan yetişkinlerin ihtiyaçlarını karşılayamamaları nedeniyle ortaya çıkabilecek ruhsal sağlık sorunlarına yönelik müdahale çalışmalarının tasarlanması önemlidir. Ayrıca Covid-19 döneminde benzer şekilde karşılaşılabilecek olası durumlar karşısında bu çalışmanın bulguları dikkate alınarak ortaya çıkan yetişkinlerin ihtiyaçları doğrultusunda adımlar atılması önerilmektedir.

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INTRODUCTION

The COVID-19 pandemic, the most serious public health issue of the past fifty years, has had a significant impact on millions of people in almost every aspect of life (World Health Organization, 2020). Measures introduced to contain the spread of the virus, including quarantine, mask usage, and social distancing, have highlighted the severity of the pandemic across the globe (Pakpour & Griffiths, 2020). These shifts in our lifestyles have reinforced the importance of psychological well-being. As a result, psychologists have been exploring the impact of the pandemic on the various psychological and social aspects of our lives.

A number of recent studies have highlighted the negative side-effects of the pandemic on the psychological and social dynamics of human life (Browning et al., 2021; Psychological Science Accelerator Self-Determination Theory Collaboration, 2022; Wang et al., 2021). Owing to the significant decrease in social interaction, people's lives have been physically, financially, and socially restricted. Circumstances such as separation from loved ones, the restriction of freedom, or uncertainty about the disease can have significant effects on mental health (Cao et al., 2020a).

Given that the subjective experience of each individual may differ under various conditions and contexts, it is important to contextualize the in-depth experiences of emerging adults in relation to their needs during the COVID-19 pandemic. Although extensive research has been carried out in this area, there is a clear lack of qualitative research exploring how the basic needs of emerging adults were or were not met during the height of the pandemic. In addition, much of the literature focuses on emerging adults from Western, Educated, Industrialized, Rich, and Democratic (WEIRD) societies (Henrich et al., 2010; Muthukrishna et al., 2020). In other words, few studies have focused on collectivist societies, as are found in Turkish culture (Arslan & Yıldırım, 2021; Yıldırım et al., 2021). In this context, this study aims to contribute to the existing literature by focusing on the needs of Turkish emerging adults in the early months of COVID-19 pandemic from an exploratory perspective.

Theoretical Framework on Needs of Emerging Adults

Some groups may be more vulnerable to psychological problems arising from the pandemic than others owing to exposure to problems that may be linked to changes in their environment (Uphoff et al., 2021). Emerging adults, who are defined as young people aged approximately 18 to 25 years who occupy a space between adolescence and young adulthood (Arnett, 2007; Schwartz et al., 2005), are one of the groups that have been greatly affected by the pandemic. Recent literature on the mental health of emerging adults during the pandemic has emphasized that they experience higher levels of anxiety, distress, and depression than other groups, and may turn to alcohol, substance use (Cao et al., 2020b; Huang & Zhao, 2020; Rossi et al., 2020; Wang et al., 2020; Zhao, 2020).

The quarantine measures that were imposed as a result of the pandemic not only enforced a psychological restriction on emerging adults but also prevented them from meeting their needs. There are various notable theories attested in the literature with regard to the needs of individuals, such as Self-determination Theory (Deci & Ryan, 2000; 2008), Choice Theory (Glasser, 1998), and Self-actualization Theory (Maslow, 1943; 1954). According to Deci and Ryan (2012), the individual's fundamental needs are *relatedness*, *autonomy*, and *competence*, whereas Maslow (1943) earlier proposed a hierarchical system that included *physiological needs, safety needs, love and belonging, esteem, and self-actualization*. However, the model was later expanded to include *cognitive, aesthetic and transcendence needs* (Maslow, 1954; 1970). Glasser (1998), on the other hand, listed basic needs as *survival, love and belonging, freedom, power,* and *fun*. When analyzed from a comparative perspective, all these theories share certain similarities. For instance, relatedness is like love and belongingness; survival is related to physiological needs; autonomy is connected with freedom; and competence can be affiliated with power and self-actualization. On the other hand, there are certain differences among these views. By way of example, although Glasser (1998) theoretically separates his perspective from that of Maslow by objecting to the semi-hierarchical classification of human needs and by assigning equal importance to the five basic needs, the theory of self-determination does not consider biological needs to be psychological needs. Moreover, Glasser (1998) prominently emphasized the need for fun compared with other theories, claiming that human beings seek various entertainments in order to motivate themselves.

Understanding the relationship between the basic needs of emerging adults and developmental tasks provides a clue to understanding the specific experiences of this group. For example; campus life is a great setting for the developmental tasks of emerging adults. It directly or indirectly serves to meet their basic needs: the process of identity formation, the establishment of material and emotional autonomy, the establishment of close and deep relationships, the finding of a romantic partner, the desire to belong to a group. In addition, students discover various internship and job positions on the campus. Unfortunately, individuals who are disconnected from campus life due to the pandemic have difficulty meeting these needs.

Many studies have emphasized the importance of meeting the basic needs of emerging adults in terms of well-being and life satisfaction (Antunes et al., 2020; Lederer et al., 2020; Matias et al., 2020; Sakan et al., 2020; Waselewski et al., 2020). Therefore, the needs that are prevented from being met as a result of preventive measures including social distancing and mandatory quarantine affect the life satisfaction and well-being of emerging adults (Brooks et al., 2020). Casale and Flett (2020) argue that in such cases it is more difficult to meet the requirements for survival. It is noteworthy that even those who generally feel more positive emotions are more prone to depression, anxiety, and stress when their basic psychological needs cannot be met as a result of the pandemic restrictions (Sakan et al., 2020). Meeting basic psychological needs contributes to the positive functioning and psychological well-being of emerging adults in various areas of life, such as work, education, and social life.

Emerging adults in Turkey experienced various difficulties in meeting their needs during the pandemic and were adversely affected by the imposition of restrictive measures. Turkish emerging adults living outside their hometowns were forced to leave their universities and return to their families. This created a new adaptation process, which comes with its own set of problems. For instance, Bulguroğlu et al. (2021) reveal that levels of physical activity among Turkish emerging adults were quite low and that levels of depression rose during the pandemic; this inevitably had an adverse effect on quality of life. In a study conducted by Acar et al. (2020), levels of anxiety among Turkish students were also found to be high. It has additionally been reported that there was a high rate of deterioration in sleep patterns, which is one of the biggest factors of psychological resilience in the Turkish population (Demir, 2020). According to Kürtüncü and Kurt (2020), the main issues negatively affecting emerging adults throughout the pandemic were the lack of face-to-face teaching, breakdowns in infrastructures of remote education, and intense affectivity experienced as a result of the restrictions. Some of the participants in this study explained that it was difficult for them to take course materials and equipment home with them when the restrictions were imposed. A study by Memiş-Doğan and Düzel (2020) has also demonstrated that students worried about becoming infected, or infecting their loved ones, with COVID-19, making many too afraid to enter crowded areas. Moreover, a recent study suggests that the psychological resilience levels of Turkish university students collapsed as a result of the pandemic (Çetin & Anuk, 2020). Participants in this study also highlighted that COVID-19 had negatively affected their forward thinking and future planning, their ability to meet their basic needs, and their general life satisfaction.

In the context of increasing levels of COVID-19-related stress (Farris et al., 2021), we hope that examining the experiences of Turkish emerging adults regarding their basic needs will make significant contributions to the literature. Therefore, the study aims to undertake an in-depth analysis of the experiences of Turkish emerging adults with regard to meeting their basic needs during the COVID-19 pandemic. This study aims to answer the following research questions:

1) How did emerging adults in Turkey describe their basic needs during the height of the COVID-19 pandemic?
2) What were the experiences of emerging adults with regard to meeting their basic needs during COVID-19?
3) How did the needs of emerging adults change during the pandemic compared with their needs before the pandemic?
4) How do emerging adults plan to meet their basic needs after the pandemic?

METHOD/MATERIALS

Participants and Procedure

This study aimed to explore the perceptions and experiences of Turkish emerging adults regarding their basic needs in the context of the COVID-19 pandemic. To achieve this, the Interpretative Phenomenological Analysis (IPA) method was used, which aims to provide detailed evaluations of individual experiences to assess how an individual makes sense of a particular phenomenon (Creswell, 2007; Moustakas, 1994). Before recruitment could take place, ethics approval was obtained from the National Ministry of Health and the university (Protocol Number: 200124/101). The study was performed in accordance with the ethical standards as laid down in the 1964 Declaration of Helsinki. To recruit eligible participants, criterion-based sampling was used, with the criteria being defined as follows: the participant must a) be an undergraduate student at any higher education institution; b) be between the ages of 18 and 28 years; c) not have any psychiatric clinical diagnosis; and d) participate in the study voluntarily. Prospective participants were contacted through course announcements, social media calls, and person-to-person communication. Those who were eligible to be recruited were included in the current study.

Based on the research questions, ten initial questions were prepared regarding the needs of emerging adults. These questions ranged from simple to complex and encompass the past as well as the future. After preparing the initial questions, three experts of counselling psychology were consulted. Pyett (2003) has recommended the use of pilot tests to maximize the expressiveness of the participants' different perspectives. Therefore, before the main interviews took place, a pilot test was conducted with two non-participant volunteers to ensure the comprehensibility of the questions. Finally, an informed consent form was provided. There were seven open-ended interview questions including demographic form and questions like "What facilitates/supports you in meeting your needs during the COVID-19 pandemic?" and "What makes it difficult for you to meet your needs?" The double-checked English translations of the materials are presented in Appendix 1.

Interviews were conducted with the participants using purposive snowball sampling. According to Onwuegbuzie and Collins (2007), it is appropriate to terminate recruitment if data collection begins to demonstrate redundancy or if it becomes too difficult to discover new information. In light of this, the first researcher felt that they had reached saturation in the seventh interview; the second researcher felt that saturation had been reached in the eighth interview. After completing their tenth interviews, both researchers terminated the recruitment process with a total of 20 emerging adults (10 males and 10 females; M_{age} = 20.7 years). Interviews were held online for public health reasons and were recorded using Zoom software (Zoom Video Communications Inc., 2020), with the data stored in a private shared drive. Before the recording, participants were informed of the scope of the research, voluntary participation, recording, and confidentiality. Participants were asked to declare out loud that they were voluntarily participating in this study. The interviews lasted between 20 and 45 minutes and were conducted in Turkish language. They were completed during the second month of lockdown in Turkey – between May 5 and June 5, 2020 (Campuses were closed on March 14).

The participants' demographics are presented in Table 1. None of the participants had contracted COVID-19 at the time of the interview. Participants were anonymized using pseudonyms to protect their confidentiality. No course credits or endorsement were provided for participation in research.

Table 1. The Demographics of the Participants

Participant ID	Gender	Age	Grade	Monthly Family Income (₺)	Place of Residence	People Lived With
P1	Male	22	Junior	4000	District	Parents
P2	Male	22	Junior	14000	City Centre	Mother and Older Brother
P3	Male	22	Sophomore	5000	City Centre	Mother
P4	Male	22	Senior	5500	District	Parents
P5	Female	20	Freshman	8000	District	Parents
P6	Male	18	Freshman	2000	Village	Parents
P7	Male	20	Sophomore	6000	District	Parents
P8	Male	28	Senior	5000	City Centre	Parents
P9	Female	21	Sophomore	5000	District	Parents
P10	Female	20	Sophomore	5000	City Centre	Parents
P11	Female	24	Junior	3500	City Centre	Parents
P12	Female	21	Freshman	2020	District	Parents
P13	Female	22	Junior	2700	Village	Parents
P14	Female	22	Junior	15000	City Centre	Parents
P15	Female	22	Junior	1500	City Centre	Parents
P16	Female	23	Junior	2.000	District	Parents
P17	Male	20	Freshman	3000	District	Parents
P18	Male	20	Freshman	1000	District	Parents
P19	Female	22	Sophomore	2800	City Centre	Parents
P20	Female	21	Freshman	5000	City Centre	Parents

Note. ₺: Turkish Lira

The reliability of the study was considered by establishing the following four criteria: (i) credibility; (ii) transferability; (iii) dependability; and (iv) confirmability (Lincoln & Guba, 1985). The preliminary analyses and meanings extracted from the data were sent to the participants in a report. On reading the report, the participants expressed their thoughts to the researcher by evaluating the completeness of the data, the adequacy of the analyses in reflecting their own reality, and whether the results related to their own perceptions and lives. The phenomenon being studied was again explained in detail. Meetings between researchers were held at short intervals to enable the research process to be critiqued through the comparison of the study results with the findings of previous studies to ensure credibility.

The research sample, setting, and process were clearly presented to ensure transferability. The study was undertaken using purposeful sampling within the framework of the inclusion and exclusion criteria. Participants' opinions were provided directly. Dependability was ensured through inter-coder consistency and by sending all the data collection tools, raw data, coding and inferences made during the analysis phase to two experts who were not involved in the study in any way. By taking the reflective comments of each researcher into consideration, the data were coded by each researcher separately to ensure confirmability. Finally, researcher triangulation was achieved by the inclusion of more than one researcher in the collection, analysis, and interpretation of the data.

Data Analysis

The aim of qualitative research is to generate data based on personal experiences (Sandelowski, 2004). The research was designed in the case study model. A case study is the description of a state or the presentation of themes related to a situation by collecting detailed and in-depth information about real life or a limited system through multiple sources of information (Creswell & Poth, 2018). All interviews were transcribed and the complete responses of the participants were read several times to enable the researchers to familiarize themselves with the data. A code sheet was created for the analysis. The raw data were initially coded separately and the findings were discussed to enable a consensus for the coding to be reached. The emerging code categories were analyzed by discussing marginal expressions or duplicate expressions in the code. When the coding process was complete, other researchers examined these codes and their hierarchical structure. After this, group discussion was conducted to decipher obscure statements. All researchers were included in the reporting.

FINDINGS

In this section, we summarized our findings in accordance with our research questions. As a result of data analyses, the needs of emerging adults are classified into five themes, namely, (i) self-allocation needs, (ii) relational needs, (iii) physiological needs, (iv) career needs and (v) finally physical needs. We tried to explain the needs of the participants in accordance with our research questions. In Table 2, we presented the themes of basic needs of our participants as a result of our analysis.

Table 2. The Basic Needs and Their Sub-Themes among Our Participants

Need Themes	Sub-themes	$F_{pre\text{-}pandemic}$	$F_{met\ during}$	$F_{unmet\ during}$
Self-allocation needs	Sightseeing	4	-	4
	Leisure time and hobbies	9	15	4
	Self-exploration	-	2	1
	Solitude	-	-	8
Relational needs	Need for hanging out	2	-	5
	Spending time with family of origin	6	9	-
	Spending time with friends	3	1	14
	Spending time with romantic partner	1	-	4
	Face-to-face interaction	-	-	5
Physiological needs	Exercising	2	1	4
	Relaxation	3	4	1
	Nutrition	1	1	4
	Regular sleep routine	1	1	-
	Personal care	-	1	1
	Walking	-	-	3
	Sexuality	-	-	1
Career needs	Career planning	3	1	1
	Studying	11	2	2
	Face-to-face education	1	-	4
Physical needs	Financial facilities	2	2	2
	Technological facilities	-	1	-

Self-allocation needs. It means devoting time, energy and resources to the individual's own well-being. In our analysis, the child themes of leisure time and hobbies, sightseeing, self-exploration and solitude emerged under the need for self-allocation. For instance, some stated that leisure time and hobbies was met during the pandemic by saying "[P16]: *I love cooking as a hobby, for example, I could find the opportunity right now. There was no such thing in the dormitory environment*" or "[P18]: … *watching some more movies at home and playing games*". On the other hand, others indicate that they could not find a time for their hobbies due to the crowdedness of the house: "[P19]: *This process did not go well, we are a large family of ten people. I'm bored, I can't read a book*". Participants also stated that they needed this time even before the pandemic. They wished to *"*[P3]: *…read books and watch movies and TV series*" or "[P7]: *…play online games".* When we ask about their plans after the pandemic, we understand that this becomes clear with the expressions "[P19]: *I was thinking of going to dance class, I will go there. It can be a piano course, to relax and add something to myself".*

None of the participants could meet their sightseeing need. They are restricted by the COVID-19 measures, although they "[P13]: … *need to travel*". On the other hand, they were able to meet this need before the pandemic: "[P1]: *I am someone who likes to travel… I went to Cyprus and sought to continue*". They are planning to "[P9]: … *travel, to see and to have fun.*" or "[P16]: *see new places"* in order to meet this need.

For self-exploration, two participants expressed that *"*[P10]: *I listened to myself, away from everything, about what kind of person I am and what I like. ... made it easier for me to take time for myself"* and *"*[P14]: *I needed to focus on living in the moment and postpone things. I learned that in the process"*. We understand by these statement that they had the time for self-exploration during the pandemic.

Regarding the solitude, they had difficulties in allocating time for themselves: (i) "[P4]: *I have been living on my own for four years, I am a person who is used to doing things on my own, after this time I can feel the difference when I return to my family. I mean, they are like my teacher, they had a negative impact on me*", (ii) *"*[P19]: *Obviously we are in a very large family, I would like some calmness, I would love to listen to my head. We are a large family of ten people… there is a voice, it's a very troublesome environment",* (iii) *"*[P5]: *I don't have a private space, my family came to where I live and we caught the pandemic together. The house is small. I don't have a private space".* Although they do not specify some of their needs to express their current situation, the lack of self-allocation needs is again understood with their plans such as "[P17]: … *going on a picnic with friends*", "[P3]: … *swimming freely*", "[P10]: *going to a shopping mall*" or "[P16]: … *taking a vacation*".

Relational needs. It is the need of an individual to share feelings, thoughts or experiences by interacting with other people and living things. Under this theme we encountered the need for spending time with family of origin, friends, romantic partner and hanging out. The need to be with the family is shaped during the quarantine measures as expected. The homesickness for family members was interpreted as dominant during the pre-pandemic period with the expression of "[P6]: *I felt the absence of*

them [his/her family members] *because I was far from my family, and from time to time, it was not always possible to go back and forth*". We concluded that

this need is satisfied for most participants during the pandemic with the expression of "[P4]: *I didn't get the opportunity to be with my family so much. it was school etc. I'm with them, having a good time. Everyone is together*". None of the participants stated that they need to see family members at this time.

Despite the restrictions, four participants met this need by contacting their friends: "[P1]: … *talking longer with my [their] friends*". However, most of them had difficulties in meeting this need. The expression of "[P9]: *I saw the importance of hugging and meeting with my friends. I suffered the most in terms of friendship and socialization. As I am a social person, I am a person who spends a lot of time with my friends. I missed them so much*" is an indicative of this finding. During the pandemic, fourteen of the participants emphasized that they needed to spend time with their friends, while only three people stated that this need was not met before the pandemic. This finding suggested that the pandemic dramatically influenced contact with friends. When we examined the plans, this need clearly came to the fore during the pandemic: "[P5]: *The first day I return to Kötekli* [Campus Location]*, I will not enter the house 24 hours a day. I don't care about walking either. I'm not going to sit anywhere with a friend and go home*". In addition to this, one participant said, "[P14]: *I am someone who interacts by touching a lot. I want to touch and contact comfortably* [with his/her friends]". Contrastingly, some planned to "[P16]: …*distance* [himself/herself] *from other people. It was a difficult process": "I understand who is our friend and not… thinking of maintaining social distancing with some of them".*

The conditions of the pandemic have also influenced the relationship with the romantic partner. One expressed that she needed to "[P13]: … *get together with my*[his/her] *boyfriend*", other said that "[P3]: *I can't see my girlfriend. If I could, I would bring time with him first*". Post-COVID plans show that they "[P8]: … *will be to meet with* [their] *girlfriend"* the need to spend time with their partners. Therefore, we infer that those romantic relationships during the COVID-19 are negatively afflicted.

One of the most expressed needs of participants was hanging out. They would like to "[P9]: *… spend time as…* [they] *wish*" or "[P17]: … *have fun*" with their social circle but "[they] *stuck at home,* [they] *… cannot go out*". Additionally, some participants also seek "[P17]: ...*face-to-face*" communication and sharing with their instructors. They claimed "[P1]: [they] … *miss* [their] *teachers*", "[P17] … *understood the value of [*their] *teachers in course*[s]".

*Physiological needs***.** It means the basic requirements necessary to ensure the physiological well-being of the body. We have combined the needs of exercising, relaxation, regular sleep routine, nutrition, personal care, sexuality and walking under this theme. Exercising has emerged as an important endeavor for the participants both before and during the pandemic. While the expression "[P4]: *It will sound a little funny, but even though I am a senior, it is more about my sports life than my studies* " indicates that exercise is an important need for the participants before the pandemic, it is noteworthy that this need is restricted by the expression "[P16]: … *didn't do it at home*" during the quarantine. For instance, they could not satisfy their need to exercise during the quarantine. It "[P4] … *took* [them] *back psychologically and dragged* [him/her] *into a negative situation*". Only one participant stated that "[P1]: *Even if there is no gym,* [he/she] *try to do what* [he/she] *knows at home alone*." We understand with the expression "[P4]: *It will sound a little funny, but even though I am a senior, it is more about my sports life than my studies*" that actually exercising is very important for them. Some also "[P4]: … *devote myself* [themselves] *to sports*" after the measures left out.

Another striking theme is the need of relaxation. It generally means physically resting and moving away from the rush of life. Some participants stated that they were away from the intense pace of the classes and expressed their comfort: *"*[P18]: *I was studying the lessons a lot, normally I didn't need much in this process, I relaxed a bit. I was very tired this semester, I didn't want to work, I had so much homework left. I'm having a really hard time though, even when doing homework".* Just one student indicated that he was not having a rest during the quarantine.

Regular sleep routine is also critical need for student's wellbeing. As expected, quarantine measures influenced student's sleep patterns. Although the participants did not directly express much about whether they could meet their sleep needs or not, they especially mentioned the irregular sleep pattern in the obstacles theme. For some reason, we can also infer that this is not a challenge unique to this period. For instance, one student also expressed "[P3]: [his/her] *sleep patterns were disturbed"* and therefore *"needed to fix*". Contrastingly, one points out that "[P12]: [he/she] *started to set my sleep schedule*".

Nutrition, like sleep need, plays a key role in the healthy functioning of the physiological cycle. In terms of nutrition, the participants did not have any difficulties in food deprivation because they were mostly with their families: One participant said, "[P3]: *My mother stayed at home when her business was closed (barista at the cafe) and I had no problem with food*". They just highlighted their concerns about gaining excessive weight: "[P18]: *We are at home, as you know, as someone who lost 15-20 kg before, I have a fear of gaining weight despite being careful…*". From this perspective, inactivity at home during quarantine indirectly influences nutrition.

Students reported that they had difficulty in paying attention to their personal care in this process*: "[P20]: Since I couldn't go out, I couldn't care about my personal care, I needed it. I need a hairdresser as a woman, my hair, nails are about personal care, personal hygiene*". In future, one plans to "[P18]: *tidy myself* [himself/herself] *up and go out, get my* [his/her] *hair cut*" when the quarantine measures are left out. There are also those who think that they can "[P20]: …*put more emphasis on cleanliness*" in this period compared to before COVID-19.

Unlike the exercising, some participants described that they wanted to move only by walking. The most important difference of these needs is that walking can be closely related to going out of the house and being outside: They "[P20]: *needed to breathe the most*". Because they are "*am in a state of anxiety… not comfortable*". Walking can give "*breath of both liberation and relief*". They "[P18]: …*really miss*[ed] *the need to travel without thinking*".

Finally, one of the participants stated that his need for sexuality was a problem: *"*[P2]: *Sex is missing. I don't have a girlfriend, I don't care about anyone, I just want it as desire satisfaction. It was there when I was in college, now it doesn't*".

Career needs. Career needs are those that an individual needs for the position or status they want to achieve in the future. An example to this status could be a career or academic achievement. In our analysis, we have found three distinct child themes under career needs: Need for studying, need for career planning and face-to-face education need.

During the pandemic, interviewees educationally felt themselves lagged behind. "[P16]: …*school life was important to*" them. However, they felt that their "…*faith to the school is gone because they* [university administration] *couldn't manage the process well*". They were expecting to be "[P8]: …*able to write something academically, doing research*" or "*attend to a language learning course*" just like before the pandemic. They could not "[P10]: s*tudy(ing)*" as much as they "*have to*". One was planning to go "[P2]: *Erasmus*" visiting. For some few, their academic responsibilities are "[P18]: …*relaxed a bit*". They "[P4]: …*didn't do homework*" a lot. Interestingly, one stated that he changed his study habits positively during this period: "[P4]: *I was someone who didn't do homework, I definitely wouldn't do the homework at school… I'm doing full homework now. It's like that, that's the only* [positive] *change in my life*". When these hard days over they would like to "[P16]: …*put(ting) [their] school life in order*."

The need for career planning was also another emerging theme for our interviewees. We found that participants have the time they want to think or make decisions about their career development during this quarantine. They "[P4]: …*started to draw a path about them, as a* [career] *plan"*: *"*[P4]: *I had the opportunity to return to myself, I had the opportunity to think about what I would do next [in my life]".* One depicted that "[P3]: *Before Covid-19, I had a need to define my career. I still think about it*". On the other side, few states that they "*need[ed] to clarify… [their] career choice[s]*". In addition, the pandemic disrupted the career development of a participant with its impact on his work life: "[P1]: *I also wanted to go to work and do the things I said I was tired of. These have increased my experience in my business life*".

It turns out that the lack of face-to-face education reduces students' academic performance. "[P20]: *I could not get efficiency in distance education; I see face-to-face education more successful. In distance education, the lesson ended in 1 hour, in normal education we were working more, we could ask questions as we wanted, we could get information, I can get information by sending a message here, but I do not think it is as successful as face-to-face. This reduced my productivity, and I could not work hard with the stress of the pandemic*". Talking about this need, an interviewee said: "O*ur academic education has been interrupted; it has really suffered. Even though it is called distance education, I cannot get any efficiency at the moment*".

Physical needs. This refers to the outsourcing requirements necessary to sustain the individual's life. We have found two needs under this theme: Financial and technological facilities. What we mean by the expression financial need is the monetary resource that is necessary for the survival of the individual. *"*[P9]: *For example, we can say money. We had to take a living by ourselves when we were in the university. I had the will to manage the money.", he said*. They had financial difficulties due to the conditions in quarantine. Some "[P3]: …*took entrepreneurship training to earn money*", some did "*not spend money, which prevented me [them] from having difficulties in accessing money*", whilst some are "[P3]: *financially relieved*" due to the support of their families. Similarly, we encountered statements about the lack of technological facilities. We interpret this as a reflection of the unexpected announcements of quarantine restrictions nationwide and the inability of individuals to prepare themselves accordingly. Some participants had to leave their technological tools behind. Others could not access the internet, while a minority has a "[P9]: …*a computer at home*".

Inhibitory Factors for the Needs

We examined the factors that make it difficult or prevent participants from meeting their needs during the pandemic. In general, we have classified these factors as (i) relational, (ii) physiological, (iii) educational, (iv) environmental, (v) personal and (vi) financial (Table 3). While barriers can prevent a single need in a situation, they can also prevent more than one need from being met.

Table 3. Barriers to the Needs During the Pandemic

Barrier Themes	Barrier Category	F
Educational barriers	Distance education	11
	Heavily assigned homework	4
	Lack of course resources	3
	Lack of access to libraries	3
	Deficiency of technological devices	3
	Attitudes of tutors	1
Personal barriers	Negative emotions	11
	Poor time-management	6
	Procrastination behavior	3

Financial barriers	Lack of financial resources	4
Physiological barriers	Irregular sleep routine	3
	Immobility	1
	Disability	1
Environmental barriers	Lack of personal space	7
	Social distancing	4
	Chores	1
Relational barriers	Conflicts between family members	4
	Living with a chronically ill person	2
	Loneliness	1

Relational Barriers. It arises in essence from interactions with others. We also considered the lack of these interactions as a relational barrier. Therefore, conflicts between family members, living with a chronically ill person and loneliness sub-themes are showed up in our analysis. "[P12]: *I am affected by the arguments in the family, there are conflicts, but when it happens*" one said. The other reports that "[P7]: *We are stuck at home. We are unable to get along with the people at home. Everything has become possible with the family, even now we are at odds*". Having a family member with a chronic illness at home prevents going out or socializing comfortably: "[P11]: *When I have a chronic patient at home, I am very restricted from going out.",* "[P14]: *Because my sister also has asthma, there was a mandatory quarantine at home.*". The presence of others is also essential to meet some needs: "[P17]: *I go to work in the parking lot, I could do sports there, actually, it's open space, but internally, I didn't feel like it afterwards, and being alone was also effective in this*".

Physiological barriers. Physiological problems experienced by the participants prevent them from meeting their needs during quarantine. "[P15] *My time is usually spent sleeping, between insomnia and sleep. I don't sleep at night, I sleep during the day, there was a sleep problem*". A recurring theme in our interviews was the immobility: "[P8]: *Although I would say the process is not bad, it would be better if there was a process where I could move more*". Disability is another physiological barrier which participants experienced: "[P18]*: I injured my foot, it's an obstacle*".

Educational barriers. These are factors that inhibit the educational development of participants. With the transition to distance education, students reported that they could not get efficiency in their academic development: "[P20]: *My internships turn into a trouble*.". In addition to this, some participants also voiced heavily assigned homework: "[P18]: *I criticize that the teachers give a lot of homework just because they have time at home, in normal life, it was easier to do homework at this time, they overlooked it*". Another common view amongst interviewees was lack of course resources. One claimed that "[P9] *I cannot study. The biggest factor that causes this is that all of my books left at the university, I brought here only one book*". One also highlighted the lack of access to libraries "*I had a shortage of textbook resources during the course[s]*". Especially, a student who has the habit of working in the library before the pandemic had difficulties in the pandemic: "[P10]: *Throughout my university life, I always worked outside the house in the library. Now it's hard to work at home, I always want to go to bed*". It was expressed that the attitudes of some teachers in the lesson prevented the students' commitment to the lesson: "[P19]: *We have problems with the professors. [They are] Constantly scolding, threatening, scaring, 'why you don't come to classes?'. What's worse is, what stresses me is our professors. So, there is a constant pressure on us. My biggest issue is that we are in consistent conflict with the professors. I do not want to be ruled by them. They try to make something achieve with threats. I am a free-spirited person. So, I do not accept their imposition*".

Environmental barriers. It describes other barriers that are not directly related to one's self or others. We have identified a number of subthemes under this theme: Lack of personal space, social distancing and chores. Participants state that they "[P19]: *do not have a personal room*" in their home. For some, it becomes so unbearable that they "[P15] *involuntarily hang out with them* [family members]." after a moment. Another difficulty for the interviewees is mandatory social distancing. It has led to the inability to establish intimacy with loved ones: "[P16]: *Social distance is preventing me; I cannot be close to my parents*". One participant also stressed that the excessive workload at home prevents him/her from dealing with her/his needs: "[P19]: *Because I am a female, housework such as cooking or wiping is expected. When I don't want to do it, it becomes a problem* [for other family members]".

Personal barriers. One of the most critical barriers of the participants was their self-inhibiting barriers. It includes negative emotions, procrastination behavior and poor time management. Especially negative emotions like boredom, worry, hopelessness or stress impact their need satisfaction: (i) "[P18]: *…I can't find anything to do*", (ii) "[P12]: *There are times when I see myself as a hopeless case. I don't want to do anything. My motivation is low.*", (iii) "[P2]: *It always gets stuck in my head when I'm not studying and standing aside. I can't be comfortable with a responsibility on the side. I can't do anything about being irresponsible*.", (iv) "[P5]: *I am a very anxious person in general. I'm constantly thinking about something involuntarily. I want to be alone with myself, but when I am alone, I involuntarily think negative thoughts. I had treatment on that, but I don't feel it's working*". Procrastination is another factor that participants think is hindering them: "[P1]: *We are trying to study. However, there happens procrastination after a while. I cannot focus. I say* [to myself]: *'I'll do it today, then, never mind! I'll do it later'. Then I'll play around with my friends. The next day: 'Okay, I will finish at least two of them* [homework]*. One of them seems to be over'. I say, 'I will start the second one!'. Then, I quit.*". Participants have difficulty in meeting their needs due to the inability to plan the time: (i) "[P10]: *I spend a lot of time on the phone and social media, so, get more disengaged*", (ii) "[P2]: *I have a bad day all day, when I don't follow my plans*".

Financial barriers. Participants report financial barriers as hindrance. Participants or their families had difficulties due to the lack of financial resources: "[P19]: *Of course, financially. I am a student. I do not have my own money. I have a scholarship. Due the fact that there is no employee in the family, you have to give all the money you have to them. Unemployment also increased in this process. All of them are unemployed because my family is large*". Lack of resource for technological devices also becomes a burden for them: (i) "*Internet connection is not always available*", (ii) "[P19]: b*ecause I did not have enough equipment, I could not study, I could not learn*".

Facilitating Factors for the Needs

We have classified facilitative factors in five: (i) social support, (ii) technological support, (iii) physical facilities, (iv) educational support and (v) personal traits (Table 4). The first one is the most frequently mentioned one. Social support plays a role as a resilience-booster. Ten participants indicate the supporting contributions of their family: "[P1]: *The things that support my need are first of all the support of my family*". As emerging adults, they also seeked the supports of their peers: "[P5]: *My friends give moral support*!". More importantly, three interviewees also validated that they had the support of their romantic partners. "[P3]: *My girlfriend is usually very supportive. Slightly more successful than me in many aspects.*"

Table 4. Facilitators for the Needs during the Pandemic

Facilitator Themes	Facilitator Category	F
Social support	Family support	10
	Peer support	6
	Partner support	3
Personal traits	Being psychological resilient	9
	Feeling energetic	1
Technological support	Having a computer	2
	Having an internet connection	4
Physical facilities	Being in a secure environment	4
	Having a broad environment	3
Educational support	Distance education	2
	Tutor support	1
	University support	1

Technological support. Technology also had a critical role during the pandemic. this theme, we had the codes of having a computer and having an internet connection. If participants have a device or a connection to the internet, they claim these help them "[P9]: *…prepare and upload assignments.*"

Physical facilities. Another salient factor for the participants was the theme of physical facilities. It includes being a secure environment and having a broad environment. Regarding the secure environment, one participant reported that he could move freely due to the low number of cases in his town. He "[P17]: *…live[s] in the sub-district, the cases were infrequent*". This has "*relieved*" him. They "[P17]: *…were not very worried, … were mentally healthier*" and "*…did not have any problems in this regard*". The fact that the indoor living space was not narrow provided with the participants with elbow room during this process: (i) "[P15]: *Our house has a garden. I go there, regularly. It could have been worse if we were in the apartment. So, it's a good location. Detached house.*", (ii) "[P19]: *Our house has an open garden although it's so small. We are trying to grow something in there. I'm always spending my time with the soil.*"

Educational support. Although the changes in higher education and training negatively influenced students by the pandemic. We have seen that some factors have boosted their well-being. These; distance education, tutor support and university support. Unlike face-to-face education, the distance education enabled students to pass the lessons notoriously. Interestingly, no one stated that distance education improved them academically: (i) "[P18]: *I think it will be easier to pass the lessons*", (ii) "[P19]: *The only advantage is that you can cheat when they do the exam, there is no other advantage*".

While the attitudes of some professors were hindering, certain teachers were quite supportive to the participants. "[P11]: *They determine our needs by using surveys*". A few also mentioned that "[P11]: *The university bought Zoom for all professors. That's why they [our conversations] are not interrupted. They even sent laptops to students in need.*"

Personal trait. The characteristics of the individuals for hardships of the pandemic came forward as a protective factor. When we appeal what made it easier for the participants to cope with the difficulties in this period, one of the loud and clear responses we got was the emphasis on psychological resilience. They asserted that this made it easier for them to meet their needs: (i) It "[P3]: *…gives me more or less an idea of what I should do*", (ii) "[P2]: *I'm the ambitious type, I have to do it when I'm stuck. I sit and do it*". On the other hand, having a positive mindset is also acknowledged by the participants: "*I try to be positive. I think of it as something that will pass. My life is going to get somewhere after that. So, I try not to let go of the strings*". Likewise, one participant declared that she/he got rid of boredom by being energetic: "[P18]: *Of course, this is a factor in my energy. Even though I am very dull in this process, I always have a desire to do something. I have to do something.*"

What They Do to Meet the Needs?: Exhibited Behaviors

According to the need theories, a behavior or reaction is exhibited to eliminate the imbalance caused by needs. When we asked the participants what behaviors they exhibited in order to meet their needs, their responses were basically divided into four categories: (i) behaviors for building relationships, (ii) behaviors for self-allocation, (iii) behaviors for career development, (iv) behaviors for physical health (Table 5).

Table 5. Exhibited Behaviors for the Needs during the Pandemic

Behaviors Themes	Behaviors category	F
Behaviors for building relationships	Online conversation with friends	14
	Activities with family members	1
	Walking with friends	2
	Online gaming with friends	3
	Breeding a pet	2
Behaviors for career development	Learning a foreign language	2
	Studying	5
	Taking courses	1
Behaviors for self-allocation	Cooking	1
	Reading	7
	Painting	1
	Surfing on the internet	3
	Writing poems	1
	Watching tv&movies	1
Behaviors for physical health	Exercising	2
	Go for a walk in the fresh air	3
	Isolating oneself	1

The participants exhibited various behaviors especially for self-allocation needs. For instance, leisure activities are the behaviors that the participants perform in order to rest and relax. Reading was one of the prominent leisure time activities. "[P17]: *I finished five or six books in a month and a half. This has helped me. I used to read normally, but not that often*". One participant confirmed "[P17]: watch movies and TV series in English". Some participants also reported that they surfed a lot on the Internet: "[P7]: *There were travel videos on YouTube. I watch them to travel in the future... I even followed accounts on social networks about books and talked to people.*". A number of the interviewees has mentioned that they relied on hobbies for self-allocation needs. Some has "[P12]: *paint[ed]*" or endeavor on writing some pieces of "*poem*".

Regarding the relational needs, participants mentioned their activities with their families, friends. They "[P9] *…make [made] both video and audio calls*", online conversations or "[P2]: *play games like League of Legends and Counter Strike*" or "[P2] *…hiking*" with their friends. One participant "[P19]: *…built a tennis table*" or *"*[P19]: *…play[ed] okey*" to have fun with his/her family. While another one helped his/her parents in their business: "[P17]: *Due to my father's job, he is a tradesman, we have a parking lot company. I go to help; I voluntarily help them in there from morning until noon*". Last but not the least, having a pet is a way to establish a relationship. (i) "[P8]: *We bought a cat. We breed some of the cats*", (ii) "[P11]: *I go out to the garden and feed the cats and dogs*".

Participants have preferred to strengthen their careers and increase their academic performance. For this, they have tried to "[P1]: *…improve(ing)… [their] language skills*" or "[P3]: *…took entrepreneurship training to earn money*". Other than these, most of the participants indicates that they studied hard: "[P16]: *I try to focus on the lessons whenever I have the opportunity. I try to look at it even if it is not efficient. The notes uploaded and videos uploaded by the instructors.*"

Participants have engaged activities to protect their physical health as well. For instance, they took walking tours "[P3]: *…for short periods of time, even if it's 15-20 minutes. Just to get moving*". Some preferred to "[P20]: *…take a coffee, go out to the terrace. At least try to take a breath… It is kind of welcomed*". One has also asserted "[P17]: *…seriously… do sports inside the house*". In an expected way, one interviewee was careful "*to isolate myself as much as possible*".

DISCUSSION

The primary aim of this research study was to explore the experiences of Turkish emerging adults during the COVID-19 pandemic. In accordance with this aim, emerging adults' basic needs, the factors influencing these needs, and the exhibited

behaviors regarding these basic needs were identified. This is one of few qualitative research studies that specifically aims to investigate the needs-related experiences of emerging adults during the early days of the COVID-19 pandemic.

Participants described and experienced their needs in different ways during the COVID-19 pandemic. Given the individuality of each participant, the ways in which needs are met are variable. The pandemic, as a dominant factor, had an important impact on the ways in which needs were met compared with life before the pandemic. Participants encountered some newly emerging needs, as well as difficulties or conveniences in meeting the previously existing needs identified the literature. Moreover, the plans that participants hope to implement when the pandemic ends have also informed the influence of the pandemic on meeting basic needs. Participants made efforts to meet their needs in all situations, whether in times of stress or in the absence of any negative conditions. Mark's (2018) concept of Reset Equilibrium Function offers one potential explanation for this. He highlights that human beings strive for stability, security, and adaptation to change in order to reach homeostasis and thereby survive. Such an interpretation adequately describes the behavior of the participants.

The most notable result that emerged from the analysis regards the classification of participants' basic needs. Five distinctive need themes emerged from the participants' responses: (i) self-allocation, (ii) relational, (iii) physiological, (iv) career, and (v) physical needs. Relational needs are in many ways similar to needs of relatedness (Deci & Ryan, 1985), love/belongingness (Glasser, 1998), or love/belonging (Maslow, 1970). In other words, like Mottern (2008), we propose that, in essence, an individual requires the presence of and interaction with others, regardless of their developmental stage. For instance, previous studies have suggested that, before the pandemic, relational needs were largely expressed by a desire to be with family (Demiral Yılmaz et al., 2020; Scharp et al., 2016; Thurber & Walton, 2012). However, during the pandemic, the focus for participants' relational needs switched to friends and romantic partners. Participants mentioned that they had experienced relationship problems during this period. This finding corroborates the ideas of Goodboy et al. (2021), thus suggesting that emerging adults experienced increasingly negative emotions in their interactions with their significant others. Lederer et al. (2021) support this finding by highlighting that university students experienced a lack of social attachment and belonging.

We defined physiological needs as basic organismal needs, such as breathing, drinking, eating, sheltering, moving, sleeping, searching for warmth, and having sex. This theme is similar to the most basic physiological needs outlined in Maslow's hierarchy of needs (Maslow, 1970) and the survival need in Choice Theory (Glasser, 1985). Organisms seek homeostasis in every aspect of their physiological needs to survive. The conditions imposed by the pandemic led to an imbalance, restricting the movement of organisms, and disrupting their sleeping patterns and eating habits. The participants were more inactive than normal, and some of them gained weight or felt uncomfortable as a result of being prevented from participating in sports. This finding is confirmed by other similar studies that have focused on exercise (Mandolesi et al. 2018; Matias et al. 2020), sleep (Blume et al., 2020), and personal hygiene (Aristovnik et al., 2020).

Career needs are broadly defined as educational and learning needs. In one respect, Maslow's cognitive needs may resemble Glasser's need for power. Addressing this need during the pandemic was curtailed by various factors. Dodd et al. (2021) reinforce our findings by indicating that the COVID-19 restrictions had a negative impact on studying; this was associated with low levels of well-being in the first few months of the pandemic. Our findings demonstrate that participants are concerned about how they would advance or progress in their careers. Consistent with this, Franchi (2020) has argued that the COVID-19 pandemic may have reduced students' confidence in their future employment prospects. A number of our participants also mentioned their lack of motivation, weakened concentration, and impaired memory, which made learning difficult for them, similar to the other research outputs (Al-Rabiaah et al. 2020; Lovric et al., 2020).

Self-allocation needs have some similarities, as well as some differences, with certain of the theoretical explanations. Despite its resemblance to Maslow's need for self-actualization, wherein self-actualization is described as the need for transcendence and the highest unachievable need, self-allocation is a self-care need that stipulates that people allocate time for their own well-being. Regarding the similarities, self-actualization reveals the inherent potential of a person and uses this potential in the best possible way (Maslow, 1970). The pandemic allowed more leisure time, which was often overlooked in pre-pandemic daily life. Studies have shown that during the pandemic, people found themselves turning to old hobbies that they rarely had time for before (Suh et al., 2021; Venkatesan, 2021); they also acquired new hobbies (Aristovnik et al., 2020). Old pastimes such as board games and puzzles (Butler, 2020), sewing (Smart, 2020), drawing, or reading novels (Antunes et al., 2020) have gained renewed recognition for their potential to support self-actualization. Similar to our findings on the desire for solitude, Raj and Bajaj (2021) suggest that people who were alone in quarantine sought and enjoyed private time to better organize their lives.

Physical needs refer to other emerging needs identified by the participants. These are the basic requirements relating to the technological and economic needs that are also instrumental in meeting all other needs (e.g., access to the internet or money). Pereira (2008) has posited technological need as a necessary addition to Maslow's five needs; this need was indeed regarded as prominent in individuals' lifestyles and spending habits in this study. Participants felt that their lack of money made it difficult to meet their needs. The lack of money among participants emerged as a constant theme—pressures caused by lack of money are felt during both pandemic and non-pandemic times. Other studies support this finding (Lenzen et al., 2020; Ozili, 2020; Son et al., 2020).

Meeting the needs of participants is a complex and multifaceted issue. For instance, students who could once interact with their peers and receive support during face-to-face education may have been deprived of support resources owing to the establishment of distance learning (Besser et al., 2020). Such a situation can create a sense of inequality of opportunity among

young people receiving education (Daniel, 2020). Destianingsih and Satria (2020) support this by stating that students do not actively participate in lessons when they are being taught by distance learning. Moreover, the negative emotions (such as anxiety, stress, boredom, or fear) experienced by our participants created a personal barrier that prevented them from focusing on their needs. Many studies have demonstrated that this experience is not unique to the participants of this study (Sun et al., 2020; Wang et al., 2021; Wasilewski et al., 2021). Other research has found that a lack of personal space has hampered the fulfillment of needs for emerging adults, as well as for adults (Epifanio et al., 2021), adolescents (Brazendale et al., 2017; Liu et al., 2020), and even children (Wang et al., 2020). Although some participants were able to find a private area outside their home, such as a garden or a roof garden, others could not find personal space as a result of crowded living quarters. This made it difficult for them to focus on their needs, such as the need for self-allocation. Consistent with the theoretical background (Kerr & Bowen, 1988), conflicts between emerging adults and family members in our findings were expected in terms of independence-seeking and self-differentiation.

Some factors contributing to the meeting of needs during the pandemic emerged during the course of this study. Just as the participants explained in their interviews, the social support of family members, peers, and romantic partners was considered to be a protective factor of mental health in similar studies (Grey, 2020; Saltzman et al., 2020; van den Berg et al., 2021). Again, psychological resilience as an internal facilitator is emphasized (Keener et al., 2021). This finding supports previous research into this topic demonstrating that levels of resilience play a part in participation in physical activity behaviors during the pandemic (Kekäläinen et al., 2021). It is also noteworthy that people who pray, exercise, have a stable sleep schedule, or seek support had higher levels of psychological resilience during the pandemic (Killgore et al., 2020). Although technology as an instrument mostly protects social relationships (Saltzman et al., 2020) or supports education (Cao et al.,2021; Riva et al, 2020), problematic use of the Internet has been observed (Amosun et al, 2021; Islam et al., 2020). Unsurprisingly, technological tools enabled our participants to communicate with their social circle and facilitated distance learning. Some studies have indicated that participating in gardening activities (McCunn, 2021) or living in greener areas (Theodorou et al., 2021) during lockdown improved psychological health by reducing COVID-19-related stress. Living in non-crowded environments, which are considered physical facilitators, indicated a lower risk of infection. Although living in a village is relatively safe in terms of risk of infection, emerging adults may have experienced problems in their education and socialization owing to the lack of facilities.

Within the context of the wider literature, this research shows that COVID-19 is an undeniably challenging process in terms of its effect on the mental health of emerging adults. In particular, the basic needs and associated factors of emerging adults have the potential to shed light on the post-COVID-19 recovery process. Although this research was conducted with a limited number of participants living in specific conditions in Turkey, this study can nevertheless contribute to a better understanding of emerging adults in other similar cultures. The COVID-19 pandemic has significantly impacted the fulfillment of individuals' basic needs, and these effects have taken on a different dimension, particularly in collectivist societies like Turkey. In such societies, where the community's needs are prioritized over the individual's, some personal needs have been neglected or delayed during this period, resulting in negative consequences for mental health. Although the strict measures implemented early in the pandemic (such as curfews and restrictions on public gatherings) were generally beneficial for public safety in collectivist societies, the psychological well-being of individuals was sometimes overlooked. Social isolation, in societies that emphasize strong interpersonal bonds, led to increased feelings of loneliness, anxiety, and depression (Xie et al., 2020). Social support mechanisms were activated in these communities to address the basic needs of individuals during the pandemic. For instance, collective efforts to provide food and medicine to the elderly and at-risk groups became widespread in Asian countries (Li & Wang, 2020). However, in collectivist societies, there may have been obstacles to addressing individual needs, as people were encouraged to prioritize societal interests, often resulting in the suppression of their personal needs.

CONCLUSION AND RECOMMENDATIONS

As a result of this research, it has been observed that adults who emerged during the Covid-19 period have difficulty in meeting some of their basic needs (self-allocation, relational, physiological, career, physical needs). In addition, factors that prevent them from meeting their needs (educational, personal, physiological, environmental, relational) and facilitate them (social support, personal traits, technological support, physical facilities, educational support) are noteworthy.

This research was limited to emerging adults who were not infected with COVID-19 during the lockdown. Therefore, in future work, researchers could design a longitudinal study by collecting data from this group after lockdown restrictions are lifted. In addition, emerging adults infected with COVID-19 might also form the focus of similar research; their experiences could then be combined with the results presented here. However, these participants were not included as they were difficult to reach. Sampling bias may have occurred since the first participants referred to the research with similar characteristics or people they know, and the sample was generally a small group. Although there were few concerns about the generalizability of the sample due to the nature of the qualitative research, we had difficulty in representing the participants from more rural settlements as most of our participants lived in urban areas. Therefore, making use of maximum diversity sampling in possible future studies may provide access to a diverse group. Additionally, an assistant interviewer could have been used in our research so that the probing questions could be asked better and the main interviewer would not miss the verbal and non-verbal details during the interview.

Considering this study's limitations, we present several suggestions for further studies. Mental health practitioners may wish to focus on practices that incorporate risk factors (e.g., loneliness, physical inactivity, poor communication skills) and protective factors (e.g., resilience, reframing, emotion regulation) for the mental well-being of emerging adults. Furthermore, counseling centers within higher education institutions may need to strengthen their infrastructure and their provision of expert help for virtual individual or group support. It is also advisable that scientifically tested self-help applications be developed for those who are hesitant about seeking help or those who do not have the opportunity to seek expert help. Finally, policymakers should develop policies that specifically address youth mental health and engage directly with youths and professionals. It is recommended that mental health professionals strengthen teletherapy and online support groups, increase access to psychological support services to eliminate the feeling of loneliness caused by reduced physical contact, organize online group therapies and community work to strengthen interpersonal ties, and offer personal development-focused workshops, meditation, and mindfulness practices to help emerging adults add meaning to their lives. On the other hand, it is recommended that policymakers expand digital access to mental health services during the pandemic, provide free or low-cost internet access to access these services, develop programs that encourage social solidarity, fund projects that will strengthen social ties such as neighborhood and volunteering through digital platforms, and organize incentive programs for distance education and acquiring new skills.

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Statements of publication ethics

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

Researchers' contribution rate

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

Ethics Committee Approval Information

Before recruitment could take place, ethics approval was obtained from the National Ministry of Health and the university (Protocol Number: 200124/101).

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Appendix I

INFORMED CONSENT

Dear Participant,

This research aims to examine the basic needs of university students during the Covid-19 pandemic. Below, you will find various questions related to the scope of the study. We kindly request your sincere responses. There are no right or wrong answers, and we encourage you to provide detailed responses to some of the questions. Please do not hesitate to provide explanatory answers.

Individuals who are 18 years of age or older and are enrolled in regular undergraduate programs at universities are eligible to participate in this research. Participation in this study is entirely voluntary. The participation duration is expected to be between 45-60 minutes. The research consists of two phases: in the first phase, an online survey will be conducted, and in the second phase, interviews will take place. Interviews will be conducted through various platforms (Zoom, Skype, etc.) or by telephone and will be recorded. Your responses will be securely stored by the researcher. If you have any questions or feedback regarding the research, you can contact the responsible researchers via the provided email addresses. We thank you for dedicating your time and providing support to this research.

PARTICIPANT DECLARATION

I acknowledge that the research findings obtained from this study may be used, published, or shared for scientific purposes. I have not encountered any coercive behavior from the researchers regarding my participation in the study. I understand that I am under no obligation to participate, and there will be no repercussions if I choose not to. I have comprehensively understood all the explanations provided. After careful consideration, I have made the decision to participate in this research as a "participant."

A. Demographics Questions

1. Name:
2. Surname:
3. Age:
4. Gender:
    a. Female
    b. Male
    c. Other
    d. I do not want to specify
5. Department: .....
6. Grade:
    a. Freshman
    b. Sophomore
    c. Junior
    d. Senior
7. Monthly Income: (please write down in Turkish Lira) .....
8. Place of Residence:
    a. Village
    b. Town
    c. District
    d. City Centre
9. Who do you live with?
    a. Only one parent
    b. Parents
    c. Siblings
    d. Partner
    e. Other

B. Open-Ended Interview Questions

1- What are your needs in the COVID-19 pandemic?

2- What were your needs in the pre-pandemic period?

3- Which of your needs were made easier to meet by the COVID-19 pandemic?

4- What facilitates/supports meeting your needs during the COVID-19 pandemic?

5- What do you do to meet your needs during the COVID-19 pandemic?

6- What makes it difficult for you to meet your needs?

7- If you manage to overcome the pandemic, what would you like to do first?

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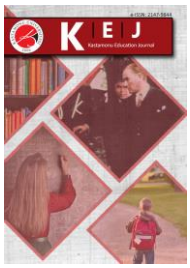

| Research Article / Araştırma Makalesi |

Evaluation of Questions in Middle School Mathematics Textbooks in Terms of Problem Solving Strategies

Ortaokul Matematik Ders Kitaplarında Yer Alan Soruların Problem Çözme Stratejileri Açısından Değerlendirilmesi

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Keywords

1. Problem solving
2. Middle school mathematics textbooks
3. Mathematics education

Anahtar Kelimeler

1. Problem Çözme
2. Ortaokul matematik ders kitapları
3. Matematik eğitimi

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Abstract

Purpose: This study aims to analyze solved problems in mathematics textbooks, focusing on both general and specific problem-solving strategies. By conducting a detailed analysis of each general strategy, the study seeks to provide a comprehensive evaluation of the problem-solving approaches presented in the textbooks.

Design/Methodology/Approach: The document analysis method was utilized in this study. Solved problems from the mathematics textbooks published by the Ministry of National Education (MoNE) for 5th, 6th, 7th, and 8th grades during the 2023-2024 academic year were examined. Data were collected using the "Solved Problems Checklist" and "Problem-Solving Strategies Determination Form" developed by Hatay (2020). A qualitative descriptive analysis method was employed to analyze the data, with percentage and frequency values calculated to present the findings.

Findings: The analysis revealed that the stages of planning and implementing a solution plan were prominently featured in the middle school mathematics textbooks. Specifically, the initial stage of understanding the problem often included visual aids such as figures, diagrams, tables, and pictures. In the planning phase, the predominant solutions involved discussions of mathematical operations.

Highlights: The study's findings indicate that while problem-solving strategies are generally emphasized in mathematics education, certain steps, such as solution evaluation, are given greater focus. Additionally, the research highlights a significant gap in the inclusion of the problem-posing stage, the final step of general problem-solving strategies, in the analyzed mathematics textbooks.

Öz

Çalışmanın amacı: Bu çalışma, matematik ders kitaplarındaki çözülmüş problemleri hem genel hem de özel stratejileri inceleyerek analiz etmeyi amaçlamaktadır. Çalışma, her bir genel stratejinin ayrıntılı bir analizini yaparak ders kitaplarında sunulan problem çözme yaklaşımlarının kapsamlı bir değerlendirmesini sağlamayı öngörmektedir.

Materyal ve Yöntem: Bu çalışmada doküman analizi yöntemi kullanılmıştır. Çalışmada Milli Eğitim Bakanlığı (MEB) tarafından 2023-2024 eğitim-öğretim yılında ortaokul 5, 6, 7 ve 8. sınıflar için yayımlanan matematik ders kitaplarında yer alan çözümlü problemler incelenmiştir. Verilerin toplanmasında Hatay'ın (2020) çalışmasında yer alan "Çözümlü Sorular Kontrol Listesi" ve "Problem Çözme Stratejileri Belirleme Formu"ndan yararlanılmıştır. Araştırmada nitel bir yaklaşım olan betimsel analiz yöntemi kullanılmıştır. Bulgulara ilişkin yüzde ve frekans değerleri hesaplanmıştır.

Bulgular: Yapılan analizler, plan yapma ve planı uygulama adımlarına ortaokul matematik ders kitaplarında belirgin bir şekilde yer verildiğini ortaya çıkarmıştır. Çözülen problemler genel stratejiler açısından incelendiğinde, problemi anlama basamağında çoğunlukla şekil, diyagram, tablo ve resimlerden yararlanıldığı görülmüştür. Planlama aşamasında ise çözümlerin ağırlıklı olarak matematiksel işlemler etrafındaki tartışmaları içerdiği görülmüştür.

Önemli Vurgular: Bu çalışmanın bulguları, matematik eğitiminde genellikle problem çözme stratejilerine vurgu yapılırken, çözümü değerlendirme gibi belirli adımlara daha fazla odaklanıldığını ortaya koymaktadır. Araştırma, matematik ders kitaplarında genel problem çözme stratejilerinin son aşaması olan problem kurma adımında dikkate değer bir boşluğa dikkat çekmektedir.

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INTRODUCTION

To live independently, individuals must possess a high level of problem-solving skills (Soylu & Pala, 2018). In daily life, we frequently encounter a wide range of problems—ranging from relatively simple issues like gum sticking to our shoes to more complex challenges such as inflation crises or geopolitical conflicts—that require effective solutions. Even a question posed by a friend or a task assigned by a teacher can present a challenge (Gelbal, 1991). In this context, a problem is defined as a situation that an individual encounters for the first time, desires to solve, but whose solution is not immediately apparent (Özdişçi & Katrancı, 2020). Problem-solving skill refers to the ability to think critically about a problem, decide on appropriate actions, utilize available resources, and reach a solution. It is believed that students who are capable of independently solving similar problems in daily life will become more autonomous individuals (Çolpan Kuru, 2021). Thus, problem-solving can be regarded as a vital component of life skills. In this context, problem-solving represents a critical thinking process essential for addressing various challenges (Özsoy, 2014). As a result, it has become a central focus in many academic disciplines, especially in mathematics education. The importance of problem-solving is extensively emphasized in both international (Ontario Ministry of Education, 2005; UK Department for Education, 2013; Toh et al., 2019) and national mathematics curricula (MoNE, 2013; MoNE, 2018), highlighting its significance. It is expected that this focus on problem-solving will be reflected in textbooks. As Bayrak (2022) observes, mathematics students are expected to engage extensively with problems presented by their textbooks and instructors. However, research suggests that many students struggle with this aspect of learning (Garderen, 2006; Kusumadewi & Retnawati, 2020). Improving problem-solving skills necessitates deep engagement with textbooks, particularly with the methods and strategies for problem-solving they present (Jäder et al., 2020). Consequently, the quality of a textbook can often be evaluated based on the presence and quality of problems that foster problem-solving strategies. This study provides a comprehensive analysis of the solved problems and problem-solving strategies in mathematics textbooks to assess their effectiveness and instructional value.

Theoretical Framework

Problem Solving Strategies

Students often encounter difficulties with mathematical problems due to various factors, such as a reluctance to engage with lengthy problem texts, which undermines their ability to effectively address mathematical challenges (Phonapichat et al., 2014). Additionally, students frequently struggle due to either a lack of comprehension of the problem itself or an inability to select appropriate strategies for resolution (Sulistyani et al., 2021). As Posamentier and Krulik (1998) emphasize, problem-solving not only assesses students' mathematical abilities but also offers essential opportunities to apply these skills in practical, real-world contexts.

A seminal framework in this field is Polya's four-stage model (1973), which outlines a systematic approach to tackling mathematical problems. This model consists of four stages: understanding the problem, devising a plan (translate), carrying out the plan (solve), and evaluating and interpreting the results (look back). In addition to Polya's model, problem posing has emerged as a key component of developing problem-solving skills, as it effectively bridges mathematical concepts with real-world applications (El Sayed, 2002). Gonzales (1994) suggests that problem posing should be added as the final stage in the problem-solving process, further enhancing the practical application of mathematical concepts.

Moreover, a wide range of problem-solving strategies has been identified, reflecting a more nuanced understanding of how these strategies can be effectively implemented in educational settings. Intaros et al. (2014) note that since students have different ways of thinking, problem-solving strategies can be utilized in various forms. Posamentier and Krulik (1998) have outlined several key strategies, including working backwards, identifying patterns, adopting multiple perspectives, solving simpler or analogous problems, considering extreme cases, using visual representations, approximating through forecasting and testing, considering all possibilities, organizing data, and applying logical reasoning. Recent research by Koç Koca and Gürbüz (2021) indicates that these strategies are not only diverse but are also evolving in complexity. This study aims to investigate how both general and specific problem-solving strategies, such as working backwards and pattern recognition, are represented and emphasized in mathematics textbooks, assessing their potential to enhance students' problem-solving skills.

Problems used in Textbooks

The use of mathematics textbooks in educational settings is crucial as it reflects the integration of mathematical culture into the learning environment through content and instructional strategies (Galiç et al., 2024). Therefore, a comprehensive analysis of mathematics textbooks reveals how teachers utilize these resources and what factors shape their usage (Rahimah & Visnovska, 2021; Sevimli et al., 2022). Furthermore, the analysis helps identify the relationship between updated mathematics curricula and the textbooks that support them (O'Keeffe, 2014). Since mathematics textbooks significantly influence students' learning experiences and opportunities (Törnroos, 2005), it is important to critically assess their content.

However, these textbooks often feature an overabundance of repetitive, routine problems that primarily require basic operations for their solutions (Marchis, 2012; Kolovou et al., 2011), commonly referred to as routine or ordinary problems (Bayrak, 2022). Moreover, tasks that can be classified as authentic mathematical problems are often scarce. When such problems do appear, they are typically found at the end of chapters and are presented in a purely mathematical context, limiting their application to real-world scenarios (Brehmer et al., 2016). Research exploring the perceptions of teachers and students regarding mathematics textbooks in Türkiye has revealed significant shortcomings (Arslan & Özpınar, 2009). For instance, Karekelleoğlu

(2007) concluded that the problems in mathematics textbooks were not appropriately leveled for students and were disconnected from their daily lives and needs. Similarly, Kazancı Dede (2020), in her study "Content Analysis of 11th Grade Mathematics Textbook and Determination of Teachers' Opinions", found that the evaluation sections in textbooks predominantly assess procedural knowledge and formula application rather than fostering a deeper, more comprehensive understanding of mathematics. Additionally, Dayak (1998) reported that students found textbooks cluttered with unnecessary information and excessive detail, while teachers felt that textbooks failed to enhance students' problem-solving skills. Furthermore, Deringöl (2020), in her analysis of problem-posing in mathematics textbooks, found that certain grade levels did not include problem-posing exercises at all. Despite these critiques, textbooks are recognized as having a significant impact on students' mathematical achievement (Mullis et al., 2012).

Research on mathematics textbooks, both nationally and internationally, often focuses on categorizing problems according to criteria such as routine versus non-routine and easy versus difficult (Jäder et al., 2020). In the national literature, substantial attention has been devoted to analyzing the problem-solving strategies used in mathematics textbooks (Çelik, 2019; Kıral-Demir & Katrancı, 2023; Hatay & Cihangir, 2021). Diverging from other studies, Fan and Zhu (2007) examined both general and specific strategies. In their comparative analysis of middle school mathematics textbooks from China, Singapore, and the USA, they applied Polya's four-stage problem-solving model to investigate general strategies, identifying 17 specific problem-solving strategies, such as 'role-playing', 'seeking patterns', and 'working backwards'. Further literature review reveals that discussions on problem-solving strategies in mathematics textbooks generally emphasize specific strategies. For instance, Çelik (2019) analyzed 10th grade mathematics textbooks and identified prevalent strategies such as the "equality or inequality writing strategy", "reasoning strategy", and "diagramming strategy". Şişçi (2023), in her analysis of middle school mathematics textbooks, found that strategies like setting equations, reasoning, and drawing figures were the most frequently used. In contrast, strategies such as simplifying the problem and working backwards were less common. Moreover, problems that allow for multiple problem-solving strategies were rarely included in these textbooks.

In the national literature, numerous studies have focused on specific problem-solving strategies in mathematics textbooks. However, problem-solving should also be considered as a comprehensive approach, similar to Polya's (1973) four-stage problem-solving process. Furthermore, incorporating problem-posing as a fifth stage could enhance students' learning experiences within the mathematics curriculum (MoNE, 2018). This study proposes that Polya's process be expanded to include problem-posing in the mathematics textbooks under examination. In addition, textbooks should not only elaborate on Polya's model but also extensively discuss specific problem-solving strategies. By analyzing textbook problems with attention to both general and specific problem-solving strategies, this study aims to provide insights into the effectiveness of these strategies. Unlike other studies, Hatay and Cihangir (2021) analyzed the solved problems in the 7th grade mathematics textbook using both general and specific strategies outlined by Polya. However, no comprehensive evaluation of mathematics textbooks across all grade levels in Turkey has been conducted that considers both perspectives.

This study hypothesizes that a thorough analysis of problem-solving strategies across all grade levels will provide essential guidance for mathematics teachers, the primary users of these textbooks. Kıral-Demir and Katrancı (2023) analyzed the solved problems in mathematics textbooks in the context of general strategies, with their distribution according to units and topics. However, this study will also analyze the steps within the problem-solving strategies, providing a more comprehensive understanding of how these strategies are implemented in mathematics textbooks. Since textbook selection plays a crucial role in shaping teaching methods and learning outcomes, determining both pedagogical approaches and student engagement (Reys et al., 2004), it is critical that mathematics textbooks include problems that enhance students' problem-solving skills. Şişçi (2023) underscores the importance of students being aware of various problem-solving methods and recognizing that problems can often be solved in multiple ways. Similarly, Xin (2007) found a significant correlation between the tasks in mathematics textbooks and students' academic performance, highlighting the impact of well-designed problems.

In conclusion, this study aims to analyze the solved problems in mathematics textbooks, examining both general and specific strategies. By conducting a detailed analysis of each general strategy, this study anticipates providing a comprehensive evaluation of the problem-solving approaches presented in these textbooks.

METHOD

Research Design

The objective of this study is to examine the problems in the mathematics textbooks used in middle schools in the 2023-2024 academic year in terms of the inclusion of problem-solving steps and problem-solving strategies. The document analysis method was employed in this study. Document analysis, also known as documentary scanning, is a method of examining and coding existing records and documents relevant to the study (Çepni, 2014).

Data Collection Tools

The aim of this study was to analyze the solved problems in mathematics textbooks published by the Ministry of National Education (MoNE) for the 5th, 6th, 7th, and 8th grades of middle school in the 2023-2024 academic year. Consulted sources included works by Korkmaz et al. (2023), Çağlayan et al. (2021), Külköylüoğlu et al. (2023), and Böge and Akıllı (2021). The textbooks containing solved problems were officially designated as primary resources by the MoNE Board of Education and

Discipline, with decisions dated 9 May 2022 (numbered 36 for 5th and 7th grades) and 28 May 2018 (numbered 78 for 6th and 8th grades). To select the textbooks and problems for analysis, opinions from three academicians who are expert in mathematics education were sought. Following their guidance, a total of 1,010 problems with solutions were examined, distributed as follows: 306 in the 5th grade, 159 in the 6th grade, 246 in the 7th grade, and 299 in the 8th grade mathematics textbooks.

The study assessed solved problems in textbooks to determine if they incorporated Polya's (1997) problem-solving steps, including problem posing. For this analysis, the "Solved Problems Checklist" and the "Problem Solving Strategies Determination Form" from Hatay's (2020) study were utilized. The Checklist includes 21 items that evaluate various aspects of problem-solving, such as understanding the problem, devising a plan, carrying out the plan, and look back and reflect. Notably, it also assesses the problem posing step. One specific item from Hatay's study—'constructing another problem appropriate to the data in the problem'—originally linked to the evaluation step, was treated as a distinct element associated with problem construction in this analysis.

The checklist consists of several items categorized by the stages of problem-solving. For understanding the problem, seven items (items 1-7) address criteria such as explaining unknown words, clarifying what is given and required, dividing problems into sub-problems, utilizing mathematical materials and technology, and employing figures, diagrams, tables, and pictures to elucidate learned concepts. Four items (items 8-11) pertain to the formulation of a plan and include criteria for mentioning mathematical and logical operations, hypothesizing, and determining strategies. The implementation of the plan is covered by three items (items 12-14), which involve the use of strategies, testing hypotheses, and solving problems based on set criteria. Six items (items 15-20) evaluate the solution, focusing on demonstrating alternative solution approaches, verifying mathematical and logical operations, making comments, producing formulas, generalizing solutions, and linking hypotheses with results. Furthermore, one item (item 1) specifically addresses the criteria related to problem posing. The form developed to identify problem-solving strategies includes ten distinct techniques, as outlined by Hatay (2020): systematic list making, drawing figures and diagrams, finding relations, simplifying the problem, working backwards, employing estimation and control strategies, establishing equations and inequalities, making tables, reasoning, and utilizing animation strategies.

Research Procedure

To analyze the solved problems, each criterion listed on the 'Solved Problems Checklist' and the 'Problem Solving Strategies Identification Form' was coded with a "1" if present during the solution stage of the problem, and "0" if absent. For a solved problem to be considered as including a specific problem-solving step, at least one of the criteria associated with that step on the Checklist must be met. If any criterion under a specific problem-solving step is identified—even if several other items could also represent that step—it was concluded that the examined solution encompasses that particular step. Data were systematically recorded in a Microsoft Office Excel 2019 worksheet, with separate tabs for each resource analyzed across different grade levels. Within these tabs, individual problems were sequentially numbered (P1, P2, ..., etc.), with each row containing data pertinent to a specific problem. In the study, the items on the Solved Problems Checklist and Problem Solving Strategies Identification Form were succinctly named and listed in the columns in the same order as they appeared on the respective forms. The Checklist is divided into sections, which facilitated the naming convention in the Excel worksheet:

- Understanding the Problem (PA): Items 1-7 were labeled as A1, A2, ..., A7.
- Devising a Plan (PD): Items 8-11 were labeled as B8, B9, B10, B11.
- Carrying out the Plan (PC) and Evaluating the Solution (ES): Items 12-14 were labeled as C12, C13, C14, and items 15-20 were labeled as C15, C16, ..., C20.
- Problem Posing (PP): This step was uniquely labeled as PP and coded with a 0 if absent, 1 if present in a structured format, 2 if semi-structured, and 3 if unstructured (free-form).

The Problem Solving Strategies on the Identification Form were labeled as ST1, ST2, ..., ST10. Additional columns were added to the Excel worksheet: "Number of Steps" to record the count of problem-solving steps identified in each solution, and "Page No". to note the textbook page on which each problem was found. An illustrative example of how the problems were analyzed is presented in Figure 1.

Cacabey Madrasah, a work of the Anatolian Seljuk Period completed in Kırşehir in 1272, was an astronomy center where astronomy research was conducted at the time. The reliefs used in its architecture symbolize the shape of the world, while the spheres symbolize the Sun and the Moon. The columns resembling missiles and the observation tower used as a minaret today are striking. In addition, the traces of the 10th planet of the solar system, which scientists announced to the world in 2005, took their place on the columns in the madrasah approximately 750 years ago.

A group of students who wanted to see Cacabey Madrasah set off from Istanbul to Kırşehir by car, covered 450 km in 300 minutes and then took a break. Continuing at the same speed after the break, this vehicle had 180 km left to reach its destination. Accordingly, let's find out how many hours it took the vehicle to cover the distance between Istanbul and Kırşehir.

Let's Understand the Problem

We know that this vehicle traveled 450 km in 300 minutes and has 180 km left to go. It is desired to find how many hours it will take to complete the distance between Istanbul and Kırşehir.

Let's Plan the Problem

Let's express our problem with a figure showing the distance between Istanbul and Kırşehir.

Let's Implement the Plan

Let's convert 300 minutes into hours. 300 ÷ 60 = 5 hours
Let's find how many km he travels in 1 hour. 450 ÷ 5 = 90 km
He travels the remaining 180 km in 180 ÷ 90 = 2 hours.
He travels the distance between two cities in 5 + 2 = 7 hours.

Let's Check the Solution

If the vehicle travels 90 km in 1 hour, it travels 90 · 7 = 630 km in 7 hours.
We find that the vehicle travels a total of 450 + 180 = 630 km and see that both results are equal.

You too, pose a problem about a situation with a similar application, solve the problem using the solution steps above and share it with your friends.

Understanding the Problem (PA):
- Cacabey Madrasah - Elucidated the rationale behind differing student expressions - **Elucidation of Ambiguous Terminology (A1)**
- Considering a vehicle that traveled 450 km in 300 minutes with 180 km remaining, it is deduced that the distance between Istanbul and Kırşehir is to be determined - **Elucidation of the Provided and Requested Information (A2).**

Devising a Plan (PD):
- The problem was visualized with a figure representing the distance between Istanbul and Kırşehir, which guided the strategic approach – **Determining of an Appropriate Strategy (B11)**

Carrying out the Plan (PC):
The plan involved converting 300 minutes into hours, calculating the distance km traveled per hour, determining the time needed to travel the remaining 180 km, and calculating the total travel time between the two cities - **Implementation of the Plan (C14).**

Evaluating the Solution(PS):
The solution's effectiveness was evaluated by verifying that the total distance calculated by multiplying the total time by speed per hour, and adding the distances given, matched the initial problem data. This step included **checking logical operations (C17).**

Problem Posing (PS)
A new problem was formulated based on a similar situation.

Problem Solving Strategies:
creating shapes and diagrams as part of the strategy - **Creation of Shapes and Diagrams (ST2).**

Stages of the Solution:
The solution comprised five stages: Understanding the Problem (PA), Devising a Plan (PD), Implementing the Plan (PC), Evaluating the Solution (ES), and Problem Posing (PP).

Figure 1. Example of a problem analysis with solution (Çağlayan et al., 2021, p. 25).

Data Analysis

The study employed the descriptive analysis method, a qualitative approach aimed at presenting findings by organizing and summarizing data in a descriptive manner (Creswell, 2016). Data analysis was conducted using Microsoft Office 19 Excel. Frequency (f) and percentage (%) values were computed to assess the inclusion of items from the data collection tool in the solved problems studied. The subsequent section presents the results in tabular format.

In evaluating the solved problems within the 5th, 6th, 7th, and 8th grade mathematics textbooks published by the Ministry of National Education (MoNE) for the presence of problem-solving steps and strategies, ensuring the validity and reliability of the study was paramount. To uphold validity, the perspectives of three experts in elementary mathematics education were solicited regarding the items in both the problem-solving checklist and the problem-solving strategies identification form. These experts assessed each item for clarity, comprehensibility, and relevance to the respective problem-solving step. Additionally, they were encouraged to highlight any concerns they deemed necessary beyond these evaluations. Following this thorough review, a consensus among the experts confirmed the suitability of the data collection instruments for the study's objectives.

Furthermore, to maintain study validity, the presentation of data analysis results was executed with clarity and precision. This involved transparently elucidating the methodologies employed to derive these results and providing detailed descriptions of the data, accompanied by direct examples of the findings. Through these measures, the study aimed to uphold the integrity and trustworthiness of its outcomes.

In order to ensure the reliability of the study, the solved problems were analysed by two different researchers and coded independently. In order to determine the agreement between the coders, the reliability formula proposed by Miles and Huberman (1994) (Reliability: [(Agreement)/(Agreement+Disagreement)x100]) was employed, along with the Cohen's Kappa Coefficient. The Kappa value calculated for the coding reliability of the study was 0.86. The value calculated with the reliability formula proposed

by Miles and Huberman (1994) is 89%. A Kappa value between 0.80 and 1 is indicative of a high degree of agreement between coders, while a value of at least 80% according to the Miles and Huberman (1994) formula is indicative of achieved coding reliability (Cohen, 1960; Miles & Huberman, 1994). The results of the reliability analysis indicate that the evaluations of the solved problems are reliable. In instances where there was a discrepancy between the coders' evaluations, the coders convened to discuss the rationale behind these differing assessments and ultimately reached a consensus. An illustration of the discrepancies in the assessments of the independent coders is presented in Figures 2 and 3.

Let's find how much money Mr. Ihsan, who wants to buy a refrigerator with a price of 3000 liras, has to pay each month if she makes the payment in cash or in 2, 3, 4, or 5 installments.

The amount of money Mr. İhsan will pay each month can be expressed as $\frac{3000}{x}$.

Algebraic Expression	Variable (Number of Installments)	Money to be Paid Every Month
$\frac{3000}{x}$	For x = 1	$\frac{3000}{x} = \frac{3000}{1} = 3000\ liras$
	For x = 2	$\frac{3000}{x} = \frac{3000}{2} = 1500\ liras$
	For x = 3	$\frac{3000}{x} = \frac{3000}{3} = 1000\ liras$
	For x = 4	$\frac{3000}{x} = \frac{3000}{4} = 750\ liras$
	For x = 5	$\frac{3000}{x} = \frac{3000}{5} = 600\ liras$

Figure 2. An example of a problem-1 that has been solved and evaluated differently by two independent coders (Çağlayan et al., 2021, p. 133).

In the case presented, one coder labeled the strategy used in the problem solution from the 6th-grade textbook, as shown in Figure 2, as "making a table (ST8)", while the other coder categorized it as "finding relations (ST2)". As a result of this disparity, it was concluded that the employed strategy was "finding relations (ST2)".

Aysun, who wants to collect a napkin collection, found 11 napkins for her first week's collection and added 5 napkins to her collection each week. Let's express the relationship between the number of napkins and the number of weeks as an algebraic expression.

SOLUTION: Let's notice that the difference between consecutive weeks is 5. Let's create a table showing the relationship between the number of weeks and the number of napkins.

Week	**1**	**2**	**3**	**4**	**5**	**6**	...	**n**
Total Number of Napkins	11	16	21	26	31	36	...	
Relationship Between Number of Napkins and Number of Steps	6 + 5 . **1**	6 + 5 . **2**	6 + 5 . **3**	6 + 5 . **4**	6 + 5 . **5**	6 + 5 . **6**	...	6 + 5 . **n**

Accordingly, the rule of the pattern is found as "6 + 5 · n" or "5 · n + 6".

Figure 3. An illustrative example-2 of a problem that has been solved and evaluated by two independent coders (Külköylüoğlu et al., 2023, p. 102)

As depicted in Figure 2, the coding of the strategy employed in the solution of the problem presented in the 7th-grade textbook, as shown in Figure 3, resulted in two distinct outcomes. One coder labeled the strategy as "making a table (ST8)", while the other coder categorized it as "finding relations (ST2)". Following discussions, the two coders reached a consensus that the strategy utilized was "finding relations (ST2)".

FINDINGS

General Strategies for Problem Solving

The general strategies addressed in mathematics textbooks include Polya's (1973) problem solving steps and Gonzales' (1994) problem posing step. Findings related to problem solving steps are presented in Table 1.

Table 1. According to problem solving steps

	5. grade		6. grade		7. grade		8. grade		Total	
Understanding the Problem	263	26%	155	16%	150	15%	190	19%	758	75%
Devising a Plan	255	25%	151	15%	183	18%	241	24%	830	82%
Carrying out a Plan	306	30%	149	14%	245	24%	299	30%	999	99%
Evaluation Solution	142	14%	118	12%	118	12%	148	15%	526	52%
Problem Posing	4	1%	4	1%	0	0%	0	0%	8	1%

** Percentage values were calculated over a total of 1010 solved problems analysed in the study.*

Upon analysis of the values presented in Table 1, it becomes evident that the step of applying the plan is consistently included in the solved problems presented in the textbooks at all grade levels. However, it is notable that the step of constructing a problem is given minimal attention across all grade levels. The findings obtained as a result of the analysis, according to the behaviours related to the problem comprehension step, are presented in Table 2.

Table 2. According to behavioural patterns observed during the understanding stage of the problem

	5. grade		6. grade		7. grade		8. grade		Total	
Explaining Unknown Words	13	1%	39	4%	0	0%	36	4%	88	9%
Explaining what is given and what is required	175	17%	120	12%	62	6%	54	5%	411	41%
Dividing Problems into Sub-Problems	13	1%	102	10%	2	0%	1	0%	118	12%
Using Mathematical Materials	17	2%	79	8%	13	1%	49	5%	158	16%
Using Technology	11	1%	53	5%	0	0%	21	2%	85	8%
Using Figure, Diagram, Table and Picture	176	17%	115	11%	135	13%	158	16%	584	58%
Explaining Learned Concepts	24	2%	80	8%	3	0%	10	1%	117	12%

** Percentage values were calculated over a total of 1010 solved problems analysed in the study.*

When Table 2 is examined, it is seen that the most frequently identified behaviours related to the step of understanding the problem in the problems examined in the 5th grade textbook are 'explaining what is given and what is required' and 'using figures, diagrams, tables and pictures' with 17%. Similarly, in the 6th grade textbook, the most frequently identified behaviour was 'explaining what is given and what is required' with 12%, and in the 7th and 8th grade textbooks, the most frequently identified behaviour related to the step of understanding the problem was 'using figures, diagrams, tables and pictures' with 13% and 16%, respectively. The results of the analysis, presented in Table 3, demonstrate the frequency with which students engage in behaviours related to the devising step.

Table 3. According to the behaviours related to the devising a plan step

	5. grade		6. grade		7. grade		8. grade		Total	
Talking about Mathematical Operations	150	15%	145	14%	130	13%	152	15%	577	57%
Mentioning Logical Operations	125	12%	34	3%	39	4%	47	5%	245	24%
Hypothesis Formulation	18	2%	40	4%	3	0%	64	6%	125	12%
Strategy Identification	184	18%	136	13%	81	8%	130	13%	531	53%

** Percentage values were calculated over a total of 1010 solved problems analysed in the study.*

When the values in Table 3 are examined, it is noteworthy that the most common behaviour related to the devising a plan step in the solved problems examined in the books at all grade levels is 'mentioning logical operations'. 'Identification a strategy' was the second most common behaviour in the problems examined at all grade levels. An example of the behaviour of 'mentioning mathematical operations' in the plan making step is presented in Figure 4.

In a province, a bus providing urban transportation, which initially had no passengers, was boarded by 22 passengers at the first stop and the bus departed. The number of passengers boarding and getting off the bus at the stops is given in the table below.

Table: Number of Passengers Getting on and off at Stops

Stops	Number of Passengers Getting off	Number of Passengers Getting on
Stop 2	8	11
Stop 3	12	5
Stop 4	3	7
Stop 5	13	1

According to the information in the table, let's find the number of passengers on the bus when it departs from the 5th stop.

SOLUTION: Using addition and subtraction operations with integers, let's find the total number of passengers getting on and off the bus at the stops separately.

The total number of passengers getting off the bus is 8 + 12 + 3 + 13 = 36,

The total number of passengers getting on the bus is 11 + 5 + 7 + 1 = 24.

In the last case, when the bus departs from the 5th stop, the number of passengers on the bus is 22 + (-36) + 24 = 10.

Figure 4. An example problem with solution for the behaviour of 'talking about mathematical operations' in the devising a plan step (Külköylüoğlu et al., 2023, p. 34)

The findings obtained as a result of the analysis according to the behaviours related to the carrying a plan step are presented in Table 4.

Table 4. According to the behaviours related to the step of carrying a plan

	5. grade		6. grade		7. grade		8. grade		Total	
Using a Strategy	209	21%	141	14%	140	14%	138	14%	628	62%
Testing Hypothesis	7	1%	47	5%	5	0%	8	1%	67	7%
Solving the Problem	306	30%	155	15%	245	24%	297	29%	1003	99%

** Percentage values were calculated over a total of 1010 solved problems analysed in the study.*

When the values in Table 4 are examined, it is noteworthy that the most common behaviour related to the step of implementing the plan in the solved problems examined in the books at all grade levels is 'solving the problem'. It is seen that 'using strategy' behaviour is the second most common behaviour in the problems examined at all grade levels. The findings obtained as a result of the analysis according to the behaviours related to the step of evaluating the solution are presented in Table 5.

Table 5. According to the behaviours related to the step of evaluating the solution

	5. grade		6. grade		7. grade		8. grade		Total	
Showing Various Solutions	15	1%	35	3%	26	3%	29	3%	105	10%
Verifying the Mathematical Operation	6	1%	59	6%	8	1%	11	1%	84	8%
Verifying Logical Operation	21	2%	76	8%	5	0%	53	5%	155	15%
Making a comment	107	11%	88	9%	98	10%	102	10%	395	39%
Formula generation and generalisation	9	1%	39	4%	14	1%	7	1%	69	7%
Associating the hypothesis with the result	9	1%	21	2%	1	0%	0	0%	31	3%

** Percentage values were calculated over a total of 1010 solved problems analysed in the study.*

When Table 5 is examined, it becomes apparent that across all grade levels, the most commonly identified behavior related to the step of evaluating the solution is 'commenting'. In the 5th, 6th, and 8th grade textbooks, 'commenting' is followed by 'verifying the logical operation'. Conversely, in the problems assessed in the 7th grade textbook, 'showing various solutions' emerges as the second most prevalent behavior. Notably, 'associating the hypothesis with the result' is a rarely observed behavior in the solved problems across all grade levels.

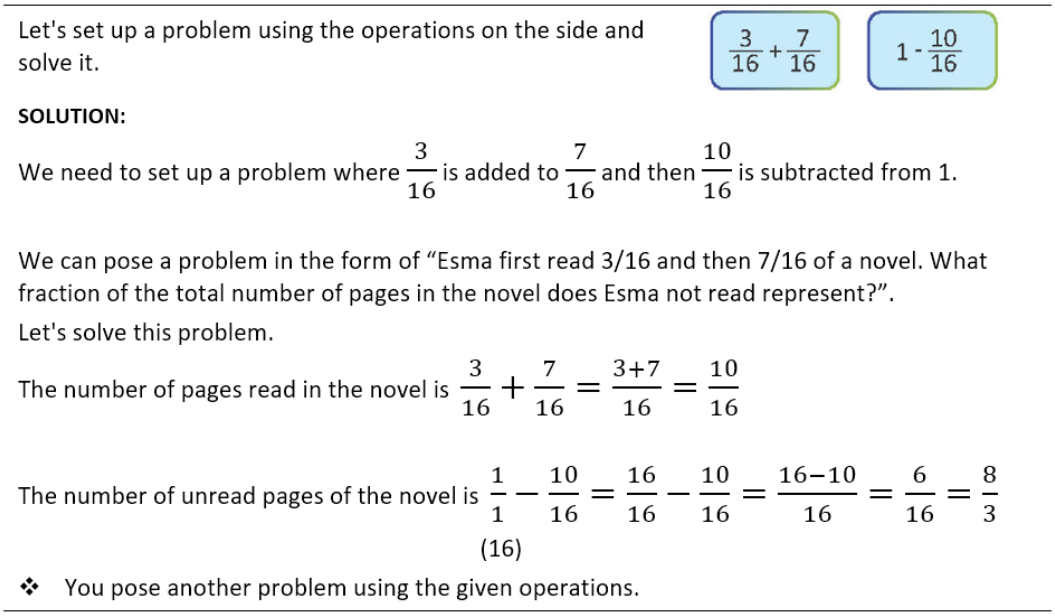
In Table 3, concerning the step of devising a plan, it is evident that the behavior of 'forming a hypothesis' is seldom encountered. Considering this observation, it can be inferred that the scarcity of 'testing the hypothesis' behaviors in the carrying out a plan step and 'associating the hypothesis with the result' behaviors in the solution evaluation step naturally align with the low occurrence of 'forming a hypothesis' behaviors in the planning stage. The findings derived from the analysis regarding behaviors associated with the problem-posing step are detailed in Table 6.

Table 6. According to the behaviours related to the problem posing step

	5. grade		6. grade		7. grade		8. grade		Total	
Structured	4	0,004%	4	0,004%	0	0%	0	0%	8	0,008%
Semi-structured	0	0%	0	0%	0	0%	0	0%	0	0%
Unstructured	0	0%	0	0%	0	0%	0	0%	0	0%

** Percentage values were calculated over a total of 1010 solved problems analysed in the study.*

When Table 6 is examined, it is seen that in the solved problems examined in the textbooks at all grade levels, 'structured' problem-posing behaviour is preferred among the behaviours related to the problem-posing step, which is already quite rare. Semi-structured or free problem posing behaviours were not included. An example of 'structured problem posing' behaviour in the problem posing step is presented in Figure 5.


Let's set up a problem using the operations on the side and solve it.

$\frac{3}{16}+\frac{7}{16}$ $1-\frac{10}{16}$

SOLUTION:

We need to set up a problem where $\frac{3}{16}$ is added to $\frac{7}{16}$ and then $\frac{10}{16}$ is subtracted from 1.

We can pose a problem in the form of "Esma first read 3/16 and then 7/16 of a novel. What fraction of the total number of pages in the novel does Esma not read represent?".

Let's solve this problem.

The number of pages read in the novel is $\frac{3}{16}+\frac{7}{16}=\frac{3+7}{16}=\frac{10}{16}$

The number of unread pages of the novel is $\frac{1}{1}-\frac{10}{16}=\frac{16}{16}-\frac{10}{16}=\frac{16-10}{16}=\frac{6}{16}=\frac{8}{3}$

(16)

❖ You pose another problem using the given operations.

Figure 5. A sample of solved problem for the behaviour of 'structured problem posing' in the problem posing step (Korkmaz et al., 2023, p. 128)

Specific Strategies for Problem Solving

The findings obtained as a result of the analysis according to the problem solving strategies used are presented in Table 7.

Table 7. According to problem solving strategies

	5. grade		6. grade		7. grade		8. grade		Total	
Systematic list	4	0%	34	3%	3	0%	9	1%	50	5%
Figure and diagram	99	10%	80	8%	89	9%	88	9%	356	35%
Finding a relation	5	0%	26	3%	12	1%	4	0%	47	5%
Simplifying the problem	4	0%	98	10%	9	1%	1	0%	112	11%
Working backwards	2	0%	24	2%	0	0%	2	0%	28	3%
Forecasting and control	31	3%	50	5%	0	0%	3	0%	84	8%
Establishing equations and inequalities	0	0%	25	2%	42	4%	28	3%	95	9%
Making a table	21	2%	15	1%	4	0%	16	2%	56	6%
Reasoning	169	17%	23	2%	32	3%	0	0%	224	22%
Animation	0	0%	13	1%	8	1%	4	0%	25	2%

** Percentage values were calculated over a total of 1010 solved problems analysed in the study.*

According to Table 7, it is seen that the most commonly used strategy in the solved problems examined in the 5th grade textbook is 'reasoning' with 17%, the most commonly used strategy in the solved problems examined in the 6th grade textbook is 'simplifying the problem' with 10%, and the most commonly used strategy in the solved problems examined in the 7th and 8th grade textbooks is 'figure and diagram' with 9%. In general, it is noteworthy that the most commonly used strategy in the 1010 solved problems analysed in the study is the 'figure and diagram' strategy with 35%. It is seen that 'animation' and 'working backwards' strategies are less preferred with 2% and 3% respectively. Examples of solved problems in which the 'figure and diagram' strategy and the 'animation' strategy were used are presented in Figure 6 and Figure 7, respectively.

If the sum of a lath in Ali's hand and $\frac{2}{5}$ of another lath of equal length is 140 cm, let's find the length of the lath in Ali's hand in centimeters.

SOLUTION: Let's take a lath consisting of five pieces.

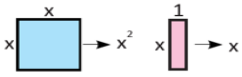
A total of 7 equal pieces are obtained. Since the total length is 140 cm, the length of each equal unit is 140 ÷ 7 = 20 centimeters.

Since the lath consists of 5 equal units, the length of the lath is found as 20 · 5 = 100 cm = 1 meter.

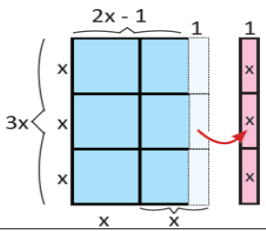
Figure 6. A sample solved problem using the 'figure and diagram' strategy (Külköylüoğlu et al., 2023, p. 86)

Let's do the multiplication of 3x(2x - 1).

Let's cut the colored papers with scissors and create algebra tiles as below.



Method 1: We can perform the operation 3x (2x - 1) using modeling for x > 1. Let's create an algebra tile with one side length 3x and the other side length 2x.



Let's cut 3 algebra tiles with one side length 1 and the other side length x from the created algebra tile with scissors as shown. The area of the remaining rectangular region is $3x(2x - 1) = 6x^2 - 3x$.

Method 2: Let's do the multiplication by using the distributive property.

$3x(2x - 1) = 3x \cdot 2x + 3x \cdot (-1)$
$= 6x^2 - 3x$

Figure 7. A sample solved problem using the 'animation' strategy (Böge & Akıllı, 2021, p. 91)

DISCUSSION, CONCLUSION AND RECOMMENDATIONS

In this study, solved problems from mathematics textbooks across various grade levels were analyzed to identify the general and specific strategies employed. The analysis revealed that the steps of planning and implementing a plan were prominently featured in middle school mathematics textbooks for the 2023-2024 academic year. This finding aligns with the research of Hatay and Cihangir (2021) on seventh-grade mathematics textbooks. Additionally, Kıral-Demir and Katrancı's (2023) investigation of middle school textbooks identified significant gaps in different phases of the problem-solving process. Notably, the stages of understanding the problem and verifying the solution's accuracy were often overlooked, while the emphasis on the planning stage (devising a plan) varied by grade level. These results imply that the frequent inclusion of steps such as devising and carrying out a plan in the analyzed problems may indicate a predominance of routine problems in the textbooks. However, Arslan and Altun (2007) have noted that non-routine problems, which more closely resemble real-life situations, tend to engage students more effectively. Furthermore, Yıldız and Ev Çimen (2017) found that the number and diversity of problem-solving activities in mathematics textbooks were limited, suggesting that textbooks do not thoroughly incorporate a broad range of problem-solving strategies. These findings underscore the need for mathematics textbooks to be structured in a way that fosters a comprehensive set of problem-solving skills among students.

When analyzing the solved problems within mathematics textbooks in terms of general strategies, it was observed that the initial stage of understanding the problem often employed figures, diagrams, tables, and pictures. Conversely, in the planning phase, solutions predominantly involved discussions around mathematical operations, with solutions based on hypothesizing being notably fewer. This pattern persisted in the implementation phase, where hypothesizing remained minimal, while direct problem-solving approaches dominated. This trend suggests a scarcity of non-routine problems in textbooks, which aligns with findings from international research (Kolovou et al., 2011; Glasnovic Gracin, 2018). For example, a Romanian study highlighted a deficiency in non-routine problems that stimulate student creativity (Marchis, 2012). Both national (MoNE, 2013; MoNE, 2018) and international mathematics curricula (Ontario Ministry of Education, 2005; UK Department for Education, 2013; Toh et al., 2019) emphasize the importance of problem-solving. However, the prevalence of routine problems in textbooks across all examined grade levels raises concerns about the curricular implementation of problem-solving. Given that non-routine problems significantly enhance students' problem-solving skills, it is crucial to increase their presence in mathematics textbooks to better reflect educational goals and improve student outcomes.

The findings of this study reveal that while problem-solving strategies are generally emphasized in mathematics education, certain steps, such as solution evaluation, receive more focus. In contrast, problems requiring higher-level cognitive skills, such as formula generation and generalization, are less commonly included. This pattern is consistent with other detailed analyses of mathematics textbooks (Kul et al., 2018; Kıral-Demir & Katrancı, 2023). The insufficient presence of such high-level questions in Turkish mathematics textbooks may hinder students' ability to effectively tackle similar problems. Countries excelling in international assessment exams like TIMSS and PISA often include a higher number of problems requiring advanced cognitive skills in their textbooks. Singapore, for example, excels in mathematics education and extensively integrates problem-solving skills into its curriculum, encouraging students to engage with diverse problem types. Singapore's mathematics textbooks are designed to foster analytical thinking and versatile problem-solving strategies, enhancing students' mathematical reasoning abilities. Such preparation is crucial for students who will face various problem types in international assessments. Therefore, educational policies and textbooks in Türkiye should adopt more robust strategies to equip students with a broad spectrum of problem-solving skills. Enriching the content of mathematics textbooks is essential for improving student performance against both local and international benchmarks, which would, in turn, elevate national educational standards and boost Turkish students' competitiveness on the global stage.

The research highlights a notable gap in the problem-posing step, the final stage of general problem-solving strategies in mathematics textbooks. While structured problem-posing—where students generate problems based on a given situation or solution, as discussed by Stoyanova and Ellerton (1996)—is included, there is a significant absence of semi-structured or free problem-posing activities. Cai et al. (2015) define problem-posing as a cognitive process where students either create new problems or modify existing ones, indicating a dynamic approach to learning mathematics. Including free or semi-structured problem-posing activities in textbooks could significantly enhance students' ability to construct and engage with new problems, fostering deeper understanding and creativity. This approach is evident in countries that perform well in international assessments, where mathematics textbooks feature a broader variety of problem-posing activities compared to those in Türkiye, as noted by Çelik & Kul (2021). To better align with successful international practices and strengthen students' problem-solving capabilities, it is essential for educational policymakers and textbook publishers in Türkiye to integrate a broader range of problem-posing activities into the mathematics curriculum.

When analyzing specific problem-solving strategies, it was found that solved problems predominantly employed strategies such as using "figures and diagrams" and reasoning, whereas the strategy of working backwards was used the least frequently. This pattern is consistent with findings from other research. For instance, Şişçi (2023) reported that reasoning and diagramming were the most common strategies in both middle and high school mathematics textbooks. Additionally, Arslan (2023) observed that various problem-solving strategies were employed in sixth-grade mathematics textbooks, differing across learning domains. Türkmen (2022) specifically examined problem-solving strategies within the learning domain of numbers and operations in secondary school mathematics textbooks, noting a similar trend where diagramming was most prevalent and working backwards

was least common. This consistency across various studies, including the present one examining textbooks across all grade levels, suggests that the dominance of certain strategies may be linked to the extensive focus on numbers and operations within the mathematics curriculum. These insights indicate a potential area for curriculum developers to consider diversifying the strategies taught and practiced in mathematics education to enhance students' problem-solving skills across a broader range of methods and contexts.

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Statements of publication ethics

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

Researchers' contribution rate

The first and the second author jointly conceptualized the theoretical framework, determined the research questions, and designed the methodology. The first and second author conducted the processes of data collection, data analysis, and discussion of the results. The first author drafted the Turkish version of the manuscript, on which both authors collaborated. The third author revised the English version of the manuscript. Finally, the first author applied the article template and submitted the manuscript to the journal.

Ethics Committee Approval Information

We declare that this study is among the studies that do not require ethics committee approval. All the rules that were stated to be followed in the entire process from planning to implementation, data collection to data analysis of this research were followed. No actions were taken that were not in accordance with scientific research and publication ethics. No falsification was made on the collected data and this study was not sent for evaluation to any other academic publication environment.

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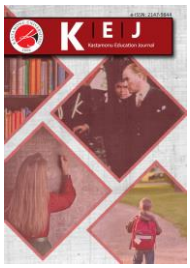

| Research Article / Araştırma Makalesi |

"Yaratıcı Drama" Kavramı ile İlgili Metaforik Algıların İncelenmesi

An Investigation of Metaphoric Perceptions about the Concept of Creative Drama

Büşra FAYETÖRBAY[1]

Keywords

1. Yaratıcı Drama
2. İngilizce Öğretmeni
3. Kavram
4. Metafor

Anahtar Kelimeler

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2. English Teacher
3. Concept
4. Metaphor

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Abstract

Purpose: The purpose of this study is to determine whether the perceptions of the participants selected from English teachers about creative drama reflect the general characteristics of creative drama by using metaphor method.

Design/Methodology/Approach: Phenomenological research is concerned with how people experience the world at a given time and in a specific context. In other words, phenomenological research aims to describe, understand and interpret the structure of phenomena arising in mind as a result of the interaction of the individuals with the World. "A metaphor form" was used as the data collection tool to determine the perceptions of the teachers about the concept of creative drama. In the form, there is an expression " creative drama is (a)... because.....". the participant selection was based on purposive sampling and particiapants were sixty English teacher.

Findings: The obtained data were analyzed through content analysis. Results showed that there occured 30 metaphoric expressions and 7 categories. These metaphors were based on game, roleplaying, several themes, creativity, real life, its developmental aspect and wasting time.

Highlights: Metaphors direct, shed light and guide our practices. This situation translates into "If a picture is worth a thousand words, a metaphor is worth a thousand pictures; Because a picture just presents a static image, a metaphor provides a mental framework for being about a phenomenon." (Shuell, 1990) is also clearly reflected. This quote effectively reveals how metaphors are a powerful tool in recording and indicating the general distribution of the human profile and especially the educators themselves.

Öz

Çalışmanın amacı: İngilizce öğretmenlerinden seçilen altmış katılımcının yaratıcı drama ile ilgili algılarının yaratıcı dramanın genel özelliklerini yansıtıp yansıtmadığını araştırmak için metafor yöntemi kullanarak belirlemektir.

Materyal ve Yöntem: Fenomenolojik araştırma, insanların belirli bir zamanda ve belirli bir bağlamda dünyayı nasıl deneyimlediğiyle ilgilenir. Başka bir deyişle, fenomenolojik araştırma, bireylerin Dünya ile etkileşimi sonucunda zihinde ortaya çıkan fenomenlerin yapısını tanımlamayı, anlamayı ve yorumlamayı amaçlar. Araştırmaya katılan öğretmenlerin 'yaratıcı drama' kavramına yönelik algılarını belirlemek amacıyla veri toplama aracı olarak 'metafor formu' kullanılmıştır. Formda "Yaratıcı drama..... . Çünkü ..... ." cümlesi yer almaktadır. Çalışma grubunu, amaçlı örnekleme yöntemiyle belirlenen 60 İngilizce öğretmeni oluşturmaktadır. Elde edilen veriler içerik analizi ile çözümlenmiştir.

Bulgular: Araştırma sonuçlarına göre; "yaratıcı drama" kavramına yönelik 30 metafor oluşturulmuştur. Bu metaforlar; oyun gibi olması, canlandırma gibi olması, konu sayısının çokluğu-sonsuz olması, konuların özelliği-yaratıcılık, yaşam gibi olması, gelişimsel olması ve zamanı boşa harcaması olmak üzere 7 kategoride toplanmıştır.

Önemli Vurgular: Metaforlar uygulamalarımıza yön verir, ışık tutar ve rehberlik eder. Bu durumu, "Bir resim bin kelimeye bedelse, bir metafor da bin resme bedeldir; çünkü bir resim sadece statik bir görüntü sunarken, bir metafor bir olgu hakkında düşünmek için zihinsel bir çerçeve sağlar." (Shuell, 1990) ifadesi de net bir şekilde yansıtmaktadır. Bu söz, metaforların insan hayatındaki genel önemini ve özellikle eğitimcilerin kendi uygulamalarını anlamada ve açıklamada ne kadar güçlü bir araç olduğunu etkili bir şekilde ortaya koymaktadır.

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INTRODUCTION

Drama is to portray a word, a concept, a behavior, a sentence, an idea or an event with an act or a play by using theatrical techniques (Levent, 1999). Drama is the rehearsal of life by participating in the drama to live, to discuss life in various ways to reveal. In this way, it also allows learning and enriching experiences. Creative drama is the use of drama to develop the creativity of individuals. Creative drama is the process of reviewing observations, experiences, and emotions by means of reorganizing former cognitive patterns and performing them in play like situations in a group work using improvisation, role-playing, theatre and drama (Hapsari, 2015; San, 2002). Creative drama is to portraying any subject by using techniques such as improvisation, role playing through the experiences of a group and its members. (Adıgüzel, 2019). Creative drama in education takes individuals into a dramatic world and teaches them by giving them experience with an understanding in which active participation of all individuals is ensured and learning is made easy and effective. Drama is a concept that evokes different feelings and thoughts for many people. This is shaped according to people's own experiences and understandings, whether in education, theater or daily life. This diversity can sometimes lead to misconceptions. Metaphors can be very powerful tools when explaining creative drama because they concretize abstract concepts and provide people with a deeper and more emotional understanding. For this reason, conducting a metaphor study on the concept of creative drama is important in terms of eliminating possible misconceptions and reaching the meaning that the concept of drama creates in people's minds.

Metaphors are one of the most powerful mental tools that structure, direct and control our thoughts about the formation and functioning of events. Metaphors are also defined as “the language of practice and meaning” in terms of giving meaning to the personal experiences of individuals (Schön,1993). Metaphors are seeing something in terms of another (Lakoff & Johnson, 1980). In fact, the similarity of the two concepts may be very small, but knowing one well allows us to better understand the second (Kılcan, 2021). Some basic functions of metaphors are the capture, interpretation, and transmission of information, the perception of new information and the usefulness of coping with uncertainty (Kövecses, 2002; Petrie & Oshlag, 1993).

Metaphors play an important role in learning and developing cognitive ideas and concepts. When perceiving the concepts, the common aspects of another concept are often brought into the mind. Another newly learned feature of a concept is often matched with the characteristics of other well-known situations or some analogies are created in minds. For this reason; metaphors are encountered in formal and informal learning as explaining difficult concepts that are difficult to understand by analogy. Metaphors are the expression of a phenomenon or concept the manner one perceives using similarities (Aydın, 2010). Metaphor as a different form of teaching method, is used to establish meaningful relationships between the existing knowledge and the new knowledge. In other words, it is one of the effective cognitive mechanisms that people use to draw conclusions and learn new concepts. Given the relevant literature, creative drama are generally studied for the effectiveness or benefit of methodological difference; and reserach findings show that creative drama is often misunderstood at the level of misconceptions. (Adıgüzel & Timuçin, 2010; Aykaç, Çakır, & İlhan, 2014; Aykaç & Çetinkaya, 2013; Barry, 2010; Dere, 2019; Johnson 2014; Larson & Brown, 2007; Ozdemir & Cakmak, 2008; Podlozny, 2000; Scroggs, Bailey& Fees, 2016; Shand, J. W., 2008; Taşkın Can, 2013; Ulubey & Toraman, 2015; Ulubey, 2018).

There are many studies in the related literature on metaphor with different themes; but there are limited metaphor studies on the concept of creative drama (Adıgüzel, 2016, Pekdoğan & Korkmaz, 2016). In the existing studies, metaphors about the concept of creative drama were examined in different groups (Bal İncebacak, Saran Tungaç & Yaman, 2017; Uysal, 2014; O’Gara, 2008). Through metaphors, the individual moves the meaning of a well-known state to an unknown state. Thus, metaphor facilitates the learning of new information (Yıldırım & Şimşek, 2021). The aim of this study is to determine whether the perceptions of English teacher about creative drama reflect the general characteristics of creative drama by using metaphor method. Within the framework of this general purpose, the following questions were sought:

1. What are the metaphors that associate English teacher have about the concept of creative drama?

2. What are the reasons for the metaphors of the concept of creative drama among the associate English teacher?

3. Under which conceptual categories can the metaphors be collected that the associate English teacher expressed regarding the common characteristics of creative drama?

METHOD/MATERIALS

The research was carried out using the phenomenological research design (van Manen, 1990). Phenomenological research is concerned with how people experience the world at a given time and in a specific context. In other words, phenomenological research aims to describe, understand and interpret the structure of phenomena arising in mind as a result of the interaction of the individuals with the World (Bloor & Wood, 2006; Çilesiz, 2011; Willig, 2008). Phenomenology primarily seeks to identify the world experienced by individuals and to explain the essence of experiences or experiences to discover the common meanings underlying the phenomenon (Baker, Wuest & Stern, 1992; Rose, Beeby & Parker, 1995).

Therefore, in phenomenology, it is emphasized that there is a connection between the phenomena and the individuals living this phenomenon and the starting point of phenomenology is the phenomena themselves. The rationale for using phenomenology in the research can be explained as follows. First, how the experiences that lie behind the phenomenon of cheating constitute the focus of the research. The basic assumptions on which the pattern is based also allow the discovery of this meaning. Secondly, the

phenomenology provided interpretation of the characteristics of consciousness within the meaning created by the participants to the concept of creative drama.

Thus, the researcher is able to produce the closest possible explanations about the reasons for the similarity of the concept of creative drama provided by other individuals through the life patterns obtained from different participants but which they found to be common. Thus, the researcher was able to produce the closest possible explanations about the reasons for simulating the concept of creative drama in other individuals through the life patterns obtained from different participants but which they found to be common.

Participants

English teachers were selected by purposive sampling method. During the purposeful sampling process, the condition of taking a Creative Drama course in undergraduate education and receiving training on Creative Drama during pre-service training was taken into account. 60 of 65 teacher met this requirement. All teachers are female.

Data Collection Tool

The study group consisted of English teachers in the of province in Turkey (Erzurum). The 'metaphor form' was used as the data collection tool to determine the perceptions of the he process of analyzing and interpreting the metaphors developed by associate degree teacher was conducted in five steps by using similar studies participating in the research on the concept of creative drama. Before the application process, the teachers' first ideas were taken with the metaphor form before receiving training on the concept of "creative drama". Metaphor is the use of words or expressions to understand another concept or object. Metaphors are powerful tools to make complex or abstract concepts more understandable (Cameron & Low, 2004; Kövecses, 2002). Metaphors are one of the most powerful mental tools that enable us to understand and structure the formation and functioning of events. Metaphors are also defined as the "language of experiences" in terms of giving meaning to individuals' personal experiences (Cameron & Low, 1999; Saban, 2004). Metaphors direct, shed light and guide our practices. In the form "Creative drama ..... is……. Because ....." is written. In metaphor studies, one concept is seen in terms of another concept's features. The word of "because" is for participants to produce reason or "logical basis" for their own analogy (Saban, 2005). In the investigation, the practitioner is a drama leader; The data were collected by means of compositions consisting of metaphor forms written by teachers with their own handwriting with two applications. In addition, before the papers were handed out to the teacherss, in order to stimulate the teachers' thoughts about these concepts and visualize the word metaphor in their minds they were told what the concept of metaphor is and the purposes for which it can be used, and metaphor examples. In addition, semi-structured interviews aimed at explaining metaphors and observations were made by the researcher in the process.

Analysis

Metaphor analysis is an analysis method used to deeply understand individuals' thoughts, feelings and understanding. By examining the metaphors people use to express complex and abstract concepts, it provides information about how people perceive the world and how they structure their perceptions. It allows one thing to be defined in terms of another and thus makes the meanings clearer and more understandable (Steger, 2007). This method offers researchers the opportunity to deeply understand the experiences of the participants and the meaning structures underlying these experiences (Saban, 2009). These concepts are interpreted and organized in a way that the reader can understand (Yıldırım & Şimşek, 2015). The process of analyzing and ithe metaphors developed by associate was conducted in five steps by using similar studies (Saban, 2008; 2009). These stages; (1) coding, (2) classification, (3) category development, (4) validity and reliability, and (5) transferring data to the computer.

1- Coding: In this phase, all the metaphors and their reasons from the participants were noted and a list was formed in alphabetical order from the metaphors. Any metaphor or papers whose reasons are not written or clearly stated are excluded from the scope of the research. Of the data from 75 people, 60 were considered usable. Of the 15 data identified as unqualified data, 10 of the metaphors do not contain explanations, whereas 5 of them have more than one metaphor.

2- Classification: Metaphors listed in the first stage, the image of the metaphor has been reviewed in terms of the source of the metaphor and the relationship between the subject and the source of the metaphor. The similarities between the metaphors were analyzed by considering them and the obtained metaphors were classified according to their names and frequencies.

3- Theme development: Metaphors are grouped under seven conceptual themes, which are assumed to represent the best for each, in terms of their common characteristics, taking into account their names and reasons. Themes: To be games, to be portrayal, the number of topics-infinity, the characteristics of the subjects-creativity, life-like, developmental and wasting time were identified as seven headings.

4- Validity and reliability: The credibility of the results obtained in the study is accepted as one of the most important criteria of scientific research. In order to ensure credibility and to evaluate the study scientifically, "the research process and its results must be clear, consistent and verifiable by other researchers" (Yıldırım & Şimşek, 2015: 265). The reliability of the content analysis depends on the coding process and categories (Gökçe, 2001). For this reason, every step of analysis from obtaining metaphors to reporting is presented in detail. In addition, direct quotations on the metaphors in each category are included. The reliability of the study was provided by referring to the expert opinion, For the reliability of the study, the reliability formula of Miles and Huberman (1994) (Reliability = Consensus / (Consensus + Disagreement)) was applied. All metaphors obtained from the

participants were listed and the list of 7 categories was sent to the expert and each of the 64 metaphors (none of these metaphors should be left outside) was asked to be placed in these 7 categories. The researchers then compared this assessment with their matching. In qualitative research, it is stated that the concordance between the evaluations made by the experts and researchers consulted should be 90% and above, and in such cases reliability will be ensured (Saban et al., 2006; Saban, 2009). In this study, 99% reliability was achieved. The expert, who was consulted within the scope of the reliability study, placed one metaphor in a different category than the researcher did and associated it. In this case it was found that, Reliability = 100 / (100 + 1) = .99 (Miles and Huberman, 1994).

5- Transferring data to computer: After defining 75 metaphors and seven categories in which these metaphors are collected by transferring the data to the computer, frequency and percentage values of the metaphors for the 30 metaphors formed by 60 people, the metaphors for the categories, and the number of metaphors covered by the category are calculated.

FINDINGS

1. The metaphors of "Creative Drama" provided by English teachers associate degree teachers are given in Table 1.

Table 1. The Metaphors Of The Participants About The Concept Of Creative Drama

N	Metaphor	f	%	N	Metaphor	f	%
1	Game	8	%27	16	Role Playing	2	%7
2	Portrayal	6	%20	17	Courses	1	%4
3	Improvisation	4	%14	18	Stage Event	1	%4
4	Pretending	3	%10	19	Dreaming	1	%4
5	Creativity	3	%10	20	Flowers	1	%4
6	Brain Teaser Game	2	%7	21	Mirror	1	%4
7	Piggy Bank	2	%7	22	Music	1	%4
8	Waste Of Time	2	%7	23	Sky	1	%4
9	Musical Educational Games	2	%7	24	Costly Jobs	1	%4
10	Events	2	%7	25	Dollhouse Game	1	%4
11	Information Box	2	%7	26	Clash Portrayal	1	%4
12	Freedom	2	%7	27	Brain Teaser Game	1	%4
13	Experiences	2	%7	28	Emotions	1	%4
14	Leisure Work	2	%7	29	Book Summary	1	%4
15	Life	2	%7	30	Quiz Games	1	%4
					Total	30	%100

When Table 1 is examined; it was seen that English teachers developed 30 metaphors for the concept of creative drama. While three of these metaphors are negative, twenty-27 are positive. According to the frequency of the first five metaphors are play, portrayal, improvisation, pretend and creativity. These metaphors show that the techniques commonly used in drama are matched to the concept of creative drama in minds.

2. The reasons for the metaphors of the concept of Creative Drama of associate degree English teachers are given in Table 2.

Table 2. Reasons For The Participants' Metaphors About The Concept Of Creative Drama

Reasons	F	N
No audience, everyone is a participant	12	% 12

Reasons	F	N
Gives happiness	10	% 10
Free moves	9	% 9
It makes you feel good	8	% 8
Learning is fun	7	%7
It requires imagination	7	%7
Educational	7	%7
It is unprepared	6	%6
Improves empathy ability	6	%6
Warming starts with preparation and continues with portrayal and ends with evaluation	5	%5
Emphasizes equality	5	%5
Suitable for all age groups	4	%4
Topics from life take place	4	%4
You are treated like you came from the inside	3	%3
Different issues and thoughts emerge each time	2	%2
It always adds something	2	%2
It is process-oriented, not product	1	%1
It takes a lot of time	1	%1
Unnecessary extendable sometimes	1	%1
	100	100

When Table 2 is examined, the reasons for the metaphors developed by the English teachers regarding the concept of creative drama, the word of “because” is seen. While two of these reasons are negative, 17 are positive. According to the frequencies of the top five metaphors are due to the absence of the audience, to give happiness, providing free movement, feeling good, entertaining teaching, imagination and educational potantial. These reasons show the effects of creative drama or the benefits of creative drama. This shows that the concept of creative drama in which positive metaphors are matched is associated with the effects of creative drama method. The reasons for the negative metaphors are that it takes much time and that process is the unnecesserally extended.

3. The category-metaphor frequency and number table of the metaphors related to the concept of creative drama are given in the Table 3.

Table 3. ***Category-Metaphor Frequency And Number Table Of Metaphors Related To The Concept Of Drama Creative Drama***

Category	Metaphors	Frequency	Number
To be a game	Game (8), intelligence game (1), musical educational game (1), activity (2) stage activity (1), Dollhouse Game (1).	12	6
Plurality of subject-cumulative progression	Infinity (2), Unlimited topics (1), lessons (1), information box (1), piggy bank (1), music (1), quiz (1).	8	7

Category	Metaphors	Frequency	Number
To be portrayal	Portrayal (6), role playing (1), conflict portrayal (1).	8	3
To be real life	Life (2), life (1) experience (1), flower (1), emotion (1), sky (1).	7	6
To be progressive	Creativity (3), freedom (2) mirror (1).	6	3
To be waste of time	Waste of time (1), costly work (1), book summary (1), leisure time (1).	4	4
To be improvisional	Role playing (2), unprepared speech (1).	3	2
	Total	48	31

Tabel 3 shows that the category of being game-like has the highest metaphor frequency. The concept of creative drama is generally expressed with play. In another creative metaphor, the creative drama, the abundance of the subject is wide. The categorization of basic creative drama concepts, such as pretending to animate, shows that the concepts at the mental and cognitive level are correctly located and transmitted to the researcher.

Examples of metaphoric perceptions of the concept of creative drama is exemplified as follows:

“Creative drama is portrayal. Because it is mainly based on portrayals.”

“Creative drama is life. Because we pretend to have experienced or possible events or situations.

“Creative drama is a waste of time. Because it takes too long time.”

“Creative drama is improvisation. Because even if time to think is given, it happens unprepared.”

“Creative drama is a circle. Because in the process, the leader is at equal distance to each other.”

“Creative drama is an elective course. Because warming starts with preparation, continues in portrayal and is evaluated without notes in evaluation.”

DISCUSSION

When metaphors are examined, despite similarities, they were divided into certain groups and collected under seven categories; that is, being play, being portrayal, multiplicity-infinite number of subjects, feature-creativity of subjects, being life, being developmental and wasting time. It can be said that as these metaphors evoke the concept of creative drama, they meanwhile chracterise the basic features of the creative drama. Metaphor studies are generally known as simple studies that are considered unimportant and even unnecessary. However, Ben-Peretz, Mendelson & Kron (2003) stated that the metaphoric pictures created based on students' perceptions of metaphor can be used as a research tool and can also be used as a teaching tool in teacher education programs.

Mostly metaphors are positive; play, improvisation, portrayal, pretending, process, and graduality. Metaphors created; They are listed as animation, life, play, improvisation, theatre, freedom, creativity and eternity. The primary metaphor created by teachers regarding the characteristics of drama is "animation". The most frequently used technique in drama and the second stage in the process is animation. Therefore, it is an expected result that animation is among the metaphors that teachers produce most. In a similar study, primary school teacher candidates' perceptions of drama were examined and, similar to the research findings, it was determined that they mostly used the "life" metaphor (Akyol & Şenol 2016; İşyar & Yüksel 2017; Taş 2013. In Gündoğan and Ergenekon's (2019) research, in which they aimed to determine the perceptions of the concept of drama through metaphors, the most common classifications include that drama reflects life, includes life and animations, is relaxing, provides knowledge and skills, and encourages creativity. In a similar study (Bal İncebacak, Saran Tungaç & Yaman, 2017; Taşyapan (2023), they stated that creative drama is generally game-like in its details and that they learn something at the end of the process. In Adıgüzel's (2009) study examining the perceptions of Turkish and German participants towards drama, the participants produced metaphors similar to the study results that creative drama supports "creativity". Since the concept of creativity is called creative drama, it is considered as a clue and can guide people. In Yarar Kaptan and Oğuz Namdar's (2021) study, similar concepts such as life, freedom, and game are included, and the metaphors in the study are similar. The drama process should be economical in terms of time, space and material. This can be associated with the situation that in Turkey creative drama is seen as unnecessary drama class in the process for the creation of better interoperability of winning the 2023 workshop in basic education vision system. Given the rationale of the positive metaphors, the benefits of the creative drama was highlighted, the negative metaphors implied the time, place and material based constraints. This can be related to the sitiuation that the workshop system stated in basic education

vision of Turkey has not been activated yet and therefore creative drama courses and activities may be perceived to be unnecessary. In negative metaphors, loss of time, taking too much time, leisure activity were often stated. While explaining the reasons for the metaphor-similarity aspects, it has been seen that in addition to spontaneity and pretending, animation and improvisation, which are the cornerstones of creative drama, it is supported by views on the affective characteristics of creative drama. It has been concluded that there are misconceptions between creative drama and theatre, and between creative drama and play. In addition, the concept of drama, which is a concept incorrectly associated with creative drama, attracts attention. It is thought that negative metaphors occur due to misconceptions.

CONCLUSION AND RECOMMENDATIONS

Mostly metaphors showed positive indication. Due to the nature of creative drama, the concepts involved in the process have emerged. Metaphor studies can be done on the concepts that cause misconceptions for such basic concepts.

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Statements of publication ethics

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

Researchers' contribution rate

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

Ethics Committee Approval Information

This study was created from the author's observation process before her doctoral thesis, and the thesis was ethically approved.

Approving Institution Name: Atatürk University University Ethics Committee

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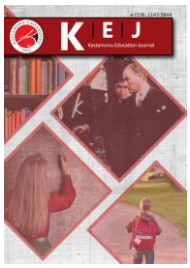

| Research Article / Araştırma Makalesi |

Investigation of 3rd Grade Life Science Textbook Texts and Activities According to Lipman's Critical Thinking Theory

3. Sınıf Hayat Bilgisi Ders Kitabında Yer Alan Metin ve Etkinliklerin Lipman'ın Eleştirel Düşünme Kuramına Göre İncelenmesi

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Keywords

1. 3rd grade Life Science textbook
2. Critical thinking
3. Matthew Lipman
4. Primary Education.

Anahtar Kelimeler

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3. Matthew Lipman
4. İlköğretim

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Abstract

Aim: Individuals need to have a philosophical critical thinking skill in order to have a reasonable approach to the situations and events they will encounter throughout their lives and to benefit themselves and the society Philosophical critical thinking is a process that enhances individuals' capacity to interrogate, analyse, and assess. In this regard, an inquisitive critical approach acquired at an early age makes important contributions to personality development. The current study aims to examine the text and activity contents in the 3rd grade Life Science textbook according to Matthew Lipman's critical thinking theory.

Methodology: Methodologically, document analysis was used in the study. In the 3rd grade Life Science textbook, the main approach in the data on text contents, activity questions and statements are that the statements have both a philosophical and critical meaning. The relevant data were analyzed according to the categories in Lipman's critical thinking approach and presented in tables.

Findings: The findings revealed that the questions and statements that meet Lipman's critical thinking categories were insufficient. While the expressions among the categories were predominantly judgment formation and being criterion/measure based, the least common categories were context sensitivity and self-correction.

Highlights: In this context, it is essential to consider the developmental stages of primary education students and contemporary educational requirements, while integrating a philosophical critical thinking approach more thoroughly into the curriculum and practices to foster an active and inquisitive student personality.

Öz

Çalışmanın amacı: Bireylerin yaşamları süresince karşılaşacakları durum ve olaylara makul yaklaşım göstermeleri, kendilerine ve topluma fayda sağlayabilmeleri felsefi bir eleştirel düşünme becerisine sahip olmalarını gerektirir. Felsefi eleştirel düşünme, bireylerin sorgulama, analiz etme ve değerlendirme yeteneklerini geliştirmelerine yardımcı olan bir süreçtir. Bu konuda erken yaşlarda edinilen sorgulayıcı eleştirel yaklaşım kişilik gelişimine önemli katkılar sunmakladır. Mevcut araştırmada 3. sınıf Hayat Bilgisi ders kitabında yer alan metin ve etkinlik içeriklerinin Matthew Lipman'ın eleştirel düşünce kuramına göre incelenmesi amaçlanmaktadır.

Materyal ve Yöntem: Yöntemsel olarak çalışmada doküman incelemesi yapılmıştır. 3. sınıf Hayat Bilgisi ders kitabındaki metin içerikleri, etkinlik soruları ve ifadelerinin ele alındığı verilerdeki temel yaklaşım, ifadelerin hem felsefi hem de eleştirel bir anlam taşıması üzerinedir. İlgili veriler, Lipman'ın eleştirel düşünce yaklaşımındaki kategorilere göre içerik analizi ile çözümlenmiş ve tablolar şeklinde sunulmuştur.

Bulgular: Ulaşılan bulgularda, Lipman'ın eleştirel düşünce kategorilerini karşılayan soru ve ifadelerin yetersiz kaldığı görülmüştür. Kategoriler arasındaki ifadeler ağırlıklı olarak yargı oluşturma ve ölçüt/kritere dayalı olma iken en az bulunan kategoriler bağlama duyarlılık ve kendi kendine düzeltme şeklindedir.

Önemli Vurgular: Bu bağlamda ilköğretim düzeyindeki öğrencilerin gelişimsel dönemlerinin ve günümüzün eğitim ihtiyaçlarının göz önüne alınması, öğrencinin etkin ve sorgulayıcı bir kişilik gelişimi için felsefi eleştirel düşünce yaklaşımının öğretim programı ve uygulamalarında daha fazla yer alması gerekliliği öne çıkmaktadır.

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INTRODUCTION

Within the framework of 21st century needs, critical thinking skills are defined as the ability of individuals to make correct evaluations against the facts and events they encounter throughout their lives. Critical thinking is intertwined with many structures such as problem solving, logic and questioning that are effective in the mental and social development of the individual (Bangert-Drowns & Bankert, 1990). The ability of individuals to make various predictions about different situations and to approach these situations with reflective skepticism is related to critical thinking skills (Brookfield, 2005). Through critical thinking, we can recognize the assumptions in our mental representations and question these assumptions. Kuhn (1999) states that critical thinking develops metacognitive understanding. With this way of thinking accompanying professional and social life, it is possible for students to be more motivated and discover deeper meanings (Foo & Quek, 2019).

Matthew Lipman is one of the important thinkers who gives special importance to critical thinking and its education. Putting forward the philosophy for children (P4C) approach, Lipman states the aims of the program as children using their minds correctly and gaining thinking skills. The approach is based on developing an understanding of critical thinking through reasoning, developing creativity and strengthening ethical understanding. According to Lipman, critical thinking is a process that involves drawing conclusions about the cognitive and intellectual skills necessary for effective definition, analysis and reasoning, and is a state in which rational decisions are made about what to believe and what to do (Lipman, 1988). Lipman distinguishes between normal thinking and critical thinking. According to him, normal thinking is simple and has no criteria, whereas critical thinking is more complex and based on objective criteria. Lipman evaluates critical thinking in terms of four categories. These are self-correction, context sensitivity, criterion-based, and judgment formation (Lipman, 2003). Lipman's theory of critical thinking categories can be defined as follows.

Lipman's Categories of Critical Thinking

***Self-correction*:** According to Lipman, critical thinking enables individuals to see their own mistakes and correct them. In a sense, the individual performs self-control, self-regulation and self-criticism. In this way, the individual has the opportunity to see and correct his/her own and the community's weaknesses and methods (Lipman, 1988).

Context sensitivity: Critical thinking is flexible thinking in the sense that it recognizes that different contexts require different applications of rules and principles. Therefore, it tries to be fair in discussion and to take into account the relevant circumstances (Lipman, 2003).

***Being based on criteria*:** According to Lipman, political, religious, social, etc. rules, conventions, traditions, etc. can be criteria (Lipman, 2003).

Judgment Formation: Lipman's judgment dimension is the result of critical thinking, and these results often appear as opinions, predictions or definite conclusions (Lipman, 2003).

One of the aims of philosophy is to give people an identity **(**Büyükdevenci, 2019). The individual finds themselves with questions such as *"why* and *why"* that they ask themselves and their environment in order to discover their own existence, and education accompanies this process **(**Kuşçu, 2023). At this stage, the individual questions their surroundings with critical thinking components such as asking questions, analyzing and comparing criteria. As a matter of fact, the educational understanding of the 21st century is based on an approach in which the student actively participates in the lesson, asks questions, and the teacher accompanies as a guide (Kaya, 2006). In this sense, the Life Science course given at the primary school level has a content that helps children understand themselves and the world (MoNE, 2009).

One of the general aims of the Life Science course is to enable students to acquire critical thinking (Bodur, 2010). Critical thinking, which is among the basic skills in this curriculum, aims to create a questioning perspective on the individual's knowledge and behavior. Within the scope of critical thinking, it is among the aims of the Ministry of National Education (MoNE) (2018) that individuals should know themselves, research and produce. Life Science textbooks also fulfill this purpose in terms of content. As a matter of fact, the 3rd grade textbook includes skills such as recognizing oneself and one's friends, questioning ideas about the consequences of possible situations and behaviors, and making comparisons between various situations (Birdoğan & Akagün, 2022). It is also stated that students meet the life skills of this curriculum outcomes mostly at the 3rd grade level (Özkan-Elgün & Uysal, 2022). As in the content of many curricula, the Life Science curriculum also includes various text contents and activity questions that make students question. In this context, the curriculum and textbooks have some questions and contents that also carry Lipman's critical thinking criteria.

Literature Review

Studies show that critical thinking is a philosophical activity, based on an inquisitive basis (Alkın-Şahin & Tunca, 2015), and that multiple-choice questions for students generally do not reflect the tendencies of critical thinking (Ku, 2009). When deciding what to believe or do, it is useful to use a range of critical thinking dispositions and abilities within certain criteria (Ennis, 1996). Critical thinking is seen as improving our thinking and presenting it in a more clear, accurate and reasoned way (Elder, 2022). Richard Paul, who considers critical thinking as a behavior that does not occur easily and spontaneously but is learned as a result of intense effort, defines the concept as "*the art of thinking about our thinking"* in order to make our thinking clearer, precise, accurate, relevant, consistent and fair. He describes the different reflection dimensions of the definition as "the art of constructive

skepticism", "the art of identifying and eliminating bias and one-sidedness of thought", "the art of self-directed, in-depth, rational learning", "the art of thinking that rationally verifies what we know and makes clear what we know about" (Paul, 1989). Critical thinking is self-directed, purposeful judgment that is evidence-based and involves interpretation, analysis, evaluation and inference (Smith-Stoner, 1999). It is stated that this way of thinking implies not only purposeful reflection but also testing the evidence and logic we and others use (Chaffee as cited in Johnson, 2002). Critical thinking, which can be developed through different teaching strategies, allows for the evaluation of decisions and the presentation of solutions through a logical and systematic review of problems (Woolfolk, 2000). Critical thinking, which is necessary in every moment of daily life, can be considered as an idea that includes logical thinking, reasoning and questioning in the process of making informed decisions (Cheek et al., 2021). On the other hand, education based on critical thinking skills positively affects students' attitudes towards using critical thinking skills (Bodur, 2010), and more effective results are achieved especially in questions specific to a certain subject (Renaud & Murray, 2008). Critical thinking is effectively applied in many different course contents. For example, English language education supported by critical thinking improves students' thinking and language skills (Bağ, 2020). For the Turkish language course, students find activities with critical thinking more fun and useful (Güzel, 2022). Within the scope of Life Science course, activities related to critical thinking skills increase students' critical thinking tendencies (Gevrek, 2023). In studies conducted in previous years, it was observed that the activities related to critical thinking skills in the Life Sciences textbooks mostly focused on inference-making and drawing conclusions (Akbay, 2017). Although the Life Science curriculum has improved in terms of basic skills over the years (Onur, 2009), critical thinking in this course is mostly tried to be met with short-answer questions (Turan, 2012). However, it is observed that students experience positive changes in skills such as recognizing the relationships between critical thinking and question-answer, interpreting questions, and reaching correct inferences by investigating the source of information (Güzel, 2022).

The current study is based on examining the place and function of philosophical thinking in education on the basis of curriculum and textbook material. For this purpose, the 3rd grade Life Science textbook was analyzed based on the theory of critical thinking in Lipman's “Philosophy for Children” theory. As a matter of fact, a systematic approach that skillfully evaluates knowledge to find the most appropriate solution to the problems encountered in daily life can be achieved through critical thinking (Thompson, 2011). In this context, it was ensured that the text and activity contents in the 3rd grade Life Science textbook were evaluated in terms of including Lipman's critical thinking components. The study research questions sought to be answered in this direction are as follows: intended to be addressed in this context are as follows:

1. Which category do the in-text expressions in the 3rd grade Life Science textbook correspond to in Lipman's critical thinking theory?
2. Which category in Lipman's critical thinking theory do the activity contents in the 3rd grade Life Science textbook correspond to?

METHOD

Research Design

In this section, the methods, data collection tools, data collection process and analysis used for the purposes of your article should be written together with the reasons why they were used. In this section, the methods, data collection tools, data collection process and analysis used for the purposes of your article should be written together with the reasons why they were used. In this section, the methods, data collection tools, data collection process and analysis used for the purposes of your article should be written together with the reasons why they were used.

In this study, document analysis was preferred since textbook analysis was used. Document analysis is the process of scanning written documents containing information about the phenomena or events under investigation in detail and creating a new integrity from this information (Creswell, 2002). Document analysis not only serves as a complement to other research methods but it can also be used independently (Wild, et al., 2009). The textbook examined in this study was found to be suitable for the nature of document analysis as since it was examined on a written and electronic basis in accordance with the study research topic (Seyidoğlu, 2016).

Data Collection Tools

The study data were obtained from the 3rd grade Life Science book, which is among the books that have been taught as textbooks in primary schools by the Ministry of National Education since 2022. The aim of the 3rd grade Life Science course is to cultivate persons possessing fundamental knowledge and life skills, together with the necessary resources appropriate for their age, through concrete activities (MoNE, 2018). In terms of its content, the curriculum is intensely related to important core values associated with philosophical thinking such as benevolence, justice, and responsibility. Furthermore, the role of philosophy and critical thinking in aiding individuals to discern choices and enhance decision-making (Alkın-Şahin & Tunca, 2015) was acknowledged, with an emphasis on the early acquisition of this talent and relevant educational resources.

During the data collection process, the researchers prepared tables based on Lipman's definitions and examples of questions covering the categories of critical thinking and compared them with the texts and activities in the textbook. In the study, each unit

was analyzed separately so that the differences between the units could be seen. In the data collection process, the text contents and activity questions were mostly based on examining the statements that carry questions such as "what for, why, how and what would you do if it were you?" Again, questions and statements involving creativity were taken into consideration since they cover "multiple perspectives" in Lipman's critical thinking theory.

Data Analysis

Content analysis was used to analyze the research data. Content analysis is a type of systematic unbiased and numerical analysis to measure variables in a text (Wimmer & Dominick, 2000, pp.135-136). In the analysis of the data described by the content analysis technique in the study, firstly, attention was paid to whether the texts and activities were included in Lipman's philosophical critical thinking dimension. The reason for this process is that not every question in the book carries a philosophical content or contains a meaning in the dimension of critical thinking. The questions and contents analyzed are judgments that students can answer why and how questions about events, facts and situations rather than measuring their level of knowledge. In addition, since some questions and contents included more than one category, there were cases where more than one coding was used for a question. The judgments in the text and activity were evaluated through four categories in Lipman's critical thinking approach. These categories are *self-correction, sensitivity to context, criterion/criteria based* and *judgment formation/decision making*. These categories, which were coded numerically, were divided into unit, text content and activity questions and quantified with frequency (f) and percentage (%) values.

Ethical Approval: Since textbooks were analyzed in the present study, ethics committee approval was not required.

Validity, Reliability and Limitations

For the validity and reliability of this study, the peer assessment technique recommended by Patton (2014) was used. To achieve this objective, expert opinions were solicited from doctorate faculty members in the philosophy and social studies departments of two different universities. The experts examined the appropriateness of the codes to the categories. Thus, an agreement was reached between the subjects and it was determined that more than one researcher agreed on a phenomenon and a collective judgment was reached (Lincoln & Guba, 1985).

The study was limited to the texts and activities in the 3rd grade life science textbook. Whether the texts and activities analyzed had a philosophical content or not was determined with the key concepts expressed by Lipman for the categories of critical thinking.

FINDINGS

The aim of the present study was to analyze the texts and activities in the 3rd grade life science textbook according to Lipman's Critical Thinking Theory. As a result of the analyses made for this purpose, 6 units were analyzed through four themes. The identified themes include a) self-correction, b) sensitivity to context, c) being criteria/measure-based and d) judgment formation. Firstly, the total activity expressions within the units and the distribution of activity expressions selected according to Lipman's critical thinking were presented (Table 1).

Table 1. **Distribution of text and activity expressions in the 3rd grade Life Science textbook**

Units	Text and activity expressions		Expressions in Lipman's categories of critical thinking	
	f	*%*	*f*	*%*
Life in our school	43	22,3	22	23,9
Life in our home	33	17,1	13	14,1
Healthy life	25	13,0	17	18,4
Safe life	32	16,6	10	10,8
Life in our country	35	18,2	17	18,4
Life in nature	24	12,5	13	14,1
Total	192	100	92	100

When Table 1 is analyzed, it is seen that the text contents and activities in the 3rd grade Life Science textbook have different distributions in each unit. The units where the distribution of texts and activities is more intense are *"Life in our school*" (22.3%), *"Life in our country*" (18.2%), "*Life in our home*" (17.1%) and "*Safe life*" *(16.6%)*. The units with the lowest text content and activities were "*Life in nature*" (12.5%) and "*Healthy life"* (13.0%). However, when the units are analyzed in Lipman's critical thinking dimension, it is seen that not every question and statement can be evaluated within this scope. It was determined that the

questions and statements in the text and activity were mostly distributed in the units of "*Life in our school"* (23.9%), "*Healthy life"* (18.4%) and "*Life in our country"* (18.4%) in the context of Lipman's critical thinking.

In the text and activity contents of the 3rd grade life science textbook, it is possible to say that there are various solutions to the problem situations encountered in social life, particularly within the triangle of home, school, and classroom. While some texts focus on helping others after the earthquake, some texts examine feelings and behaviors towards peer bullying. In the statements, there are especially questions about the possible causes and consequences of the behaviors. In addition, in the text and activity statements, expressions with root values (justice, friendship, honesty, self-control, etc.) structured on critical thinking draw attention.

Lipman's Critical Thinking Theory in Text Content

The distribution of the expressions and meaning contents in the 3rd grade Life Science textbook in relation to Lipman's critical thinking theory is presented in Table 2.

Table 2. Distribution of the expressions in the text content according to Lipman's critical thinking theory

Units	Self-correction	Sensitivity to Context	Being criteria/measure-based	Judgment Formation
	f	*f*	*f*	*f*
Life in our school	1	2	3	3
Life in our home	2	1	2	-
Healthy life	3	1	2	2
Safe life	1	-	-	-
Life in our country	1	1	3	4
Life in our school	1	-	2	2
Total	9	5	12	11

When Table 2 is examined, it is seen that critical thinking in the 3rd grade Life Science textbook is distributed in different categories. Accordingly, it is seen that the category of self-correction is mostly found in the unit "*Healthy Life" (f=2)*; the category of sensitivity to context is mostly found in the unit "*Life in our school*" *(f=2)*; the category of being based on criteria is mostly found in the units "*Life in our school*" *(f=3)* and "*Life in our country"* (f=); and the category of forming judgments is mostly found in the units "*Life in our country*" *(f=4) and "Life in our school*" (*f=3)*.

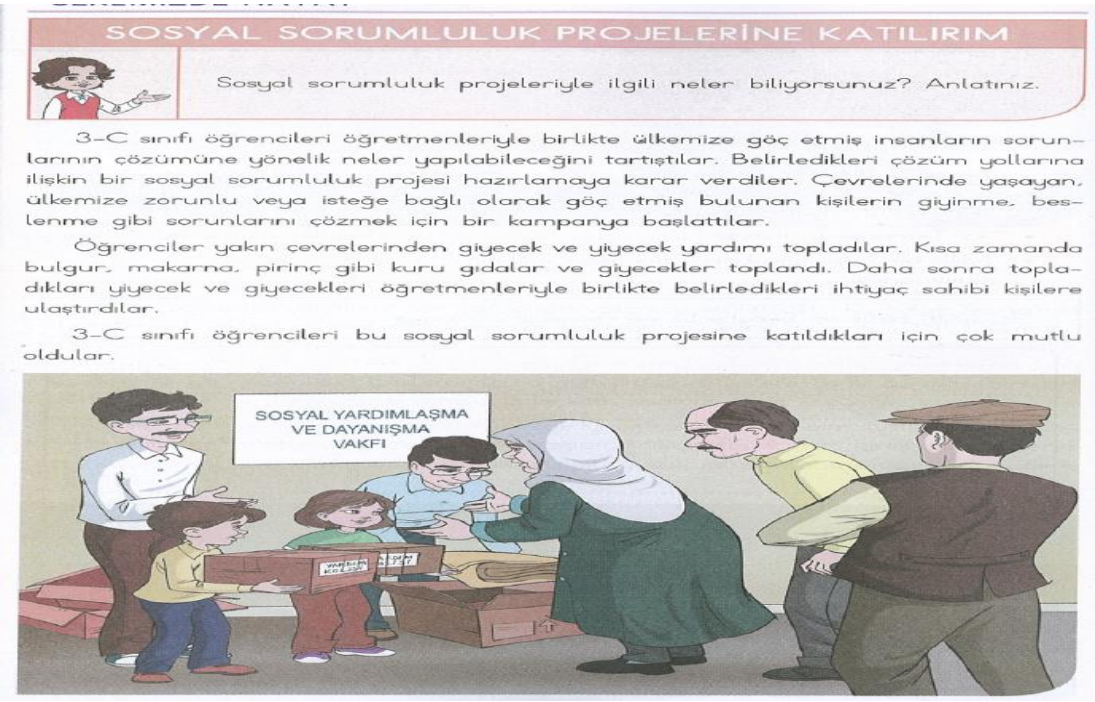
In the 3rd grade Life Science textbook, sample text expressions can be listed as follows:

Self-Correction: In the *"Life in our school*" unit in the examined Life Science textbook, an image of students playing a game draws attention. In this visual, there is a dialogue text about questions such as what the right behavior is and how it should be. The fact that a student thinks about their behavior and apologizes to their friend by realizing that they acted wrong can be shown in the "*self-correction"* category of Lipman's critical thinking (Image 1).

Image 1. Consequences of our behavior (Self-correction)

Context Sensitivity: The text "*Participation in Social Responsibility Projects*" in the "*Life in our country*" unit can be given as an example for the category of context sensitivity. In Visual 2, the discussion of what assistance can be provided to people who have immigrated to our country and then taking action by developing a project corresponds to the category of "*showing behavior by*

taking into account the relevant conditions" of context sensitivity. A special behavior was developed for individuals who migrated to our country and need material and moral help (Image 2).



Visual 2. Participation in social responsibility projects (Sensitivity to context)

Being Criterion/Measure Based: The text "*Our Duties and Responsibilities*" in the "*Life in our country"* unit can be used as an example for this category. The question "Why do you think we should try to do our job in the best way?" in the text and the teacher's statement *"If everyone does their job completely and well, our country will develop."* in the process of the mother and daughter's search for an answer to this question are associated with the result of the criteria met (Visual 3).

Visual 3. Our duties and responsibilities (Based on criteria/measure)

Judgment Formation: For the judgment dimension, which is expressed as opinion, prediction and final conclusion, it would be appropriate to give an example of the dialogues in the text "*We are organizing a charity campaign*" in the "*Life in our school*" unit. The summary of the dialogues in the text starts with the question "*How can I be useful to people who need help in the event of an earthquake?*" and ends with organizing a collective aid campaign. The decision reached in the text and its implementation can be shown as an example of Lipman's "*judgment formation"* category (Visual 4).

Visual 4. We are organizing a charity campaign (Judgment formation)

Lipman's Critical Thinking Theory in Activity Content

The distribution of the activity questions and statements in the 3rd grade Life Science textbook according to Lipman's critical thinking theory is presented in Table 3.

Table 3. Distribution of questions and statements in the activities

Units	Self-correction	Context sensitivity	Being criterion/measure-based	Judgment Formation
	f	*f*	*f*	*f*
Life in our school	1	2	4	6
Life in our home	-	2	3	3
Healthy life	-	2	5	2
Safe life	-	-	3	6
Life in our country	-	-	4	4
Life in nature	-	-	3	5
Total	1	6	22	26

When Table 3 is analyzed, it is seen that the activity questions and statements in The 3rd grade Life Science textbook, the self-correction category was found only in "*Life in our school" (f=1); the* sensitivity to context category was found in "*Life in our school" (f=2)*, "Life in *our home" (f=2)* and "*Healthy life" (f=2)*; It is seen that the category of being based on criterion/measure is mostly distributed in "*Healthy life" (f=4, Life in our school (f=4) and Life in our country (f=2);* the category of forming judgments is mostly distributed in *"Life in our school" (f=6)* and *"Safe life" (f=6)* units .

When we look at the distribution of the questions and statements in the activities throughout the unit, it can be said that most of the categories are distributed in the categories of *judgment formation (f=26)* and the fewest categories are distributed in the categories of self-correction *(f=1).*

In the 3rd grade Life Science textbook, sample activity questions and statements are as follows:

Self-Correction: The question "*What should you do to develop your interests and skills?" in* the activity section of the "*Life in our school*" unit aims to help individuals recognize, question, discover and develop their interests. In this context, it can be said that the question corresponds to "*self-correction*" in Lipman's critical thinking category.

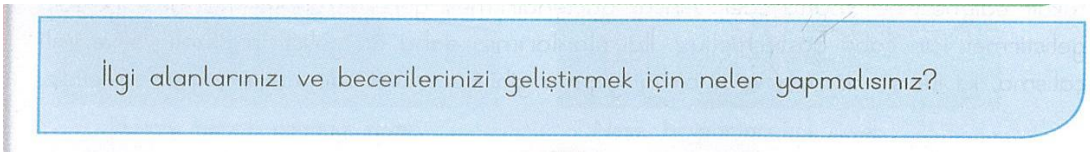
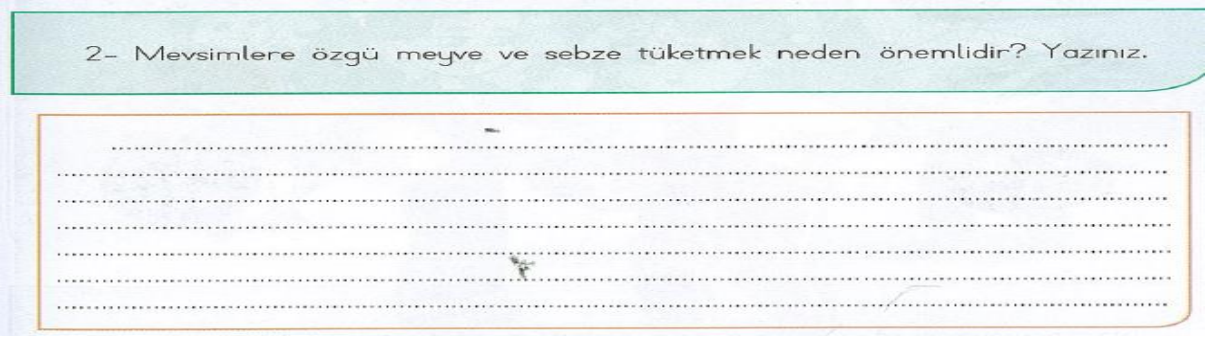


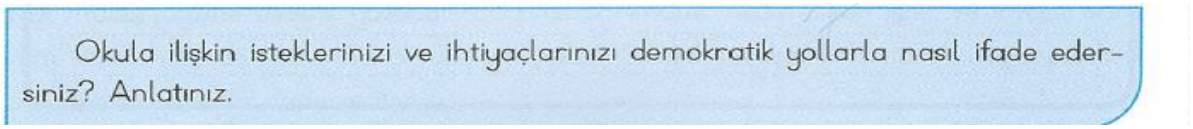
Image 5. Life in our school – I am doing the activities (Self-correction)

Context Sensitivity: The question "Why is it important to consume fruits and vegetables specific to the season?" included in the activity questions of the **"***Healthy life"* unit aimed for the individual to recognize the fruits and vegetables specific to the winter season and to develop a thought on why these products should be eaten in this season. (Image 6)



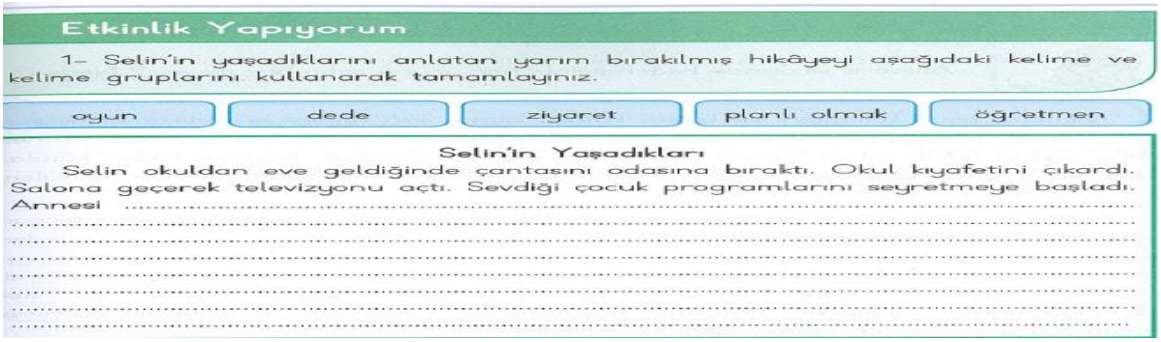
Visual 6. Healthy life – I am doing the activities - (Sensitivity to context)

***Being Criterion/Measure Based*:** With the question "How do you express your wants and needs about the school in democratic ways?" in the activities related to wants and needs in the "*Life in our school"* unit, the individual was asked to express their opinion according to the approach taken as a criterion (democracy). Therefore, it can be said that this question corresponds to Lipman's *criterion/measure-based* category.



Visual 7. Life in our school-I am doing the activities- (Being criterion/measure based)

Judgment Formation: In this statement in the "*I'm Doing an Activity*" section of the "*Life in our home*" unit, the incomplete story was asked to be completed with certain words. The main purpose of the activity is to enable the student to complete the story by using their decision-making skills (Figure 8).



Visual 8. Life in our home-I'm doing an activity- (Judgment formation)

DISCUSSION and CONCLUSION

In modern history, critical thinking has existed as a reasonable and reflective thinking focused on deciding what to believe or what to do (Ennis, 1996). This approach is also considered as an important threshold in the creation of the knowledge society. In other words, individuals who are involved in such a structured educational process and who have this type of thinking gain the ability to analyze materials and determine their validity through their questioning skills. Therefore, the development of coherent and logical reasoning models (Stahl & Stahl, 1991) and the formulation of logical conclusions (Simon & Kaplan, 1989) are extremely important in critical thinking. Critical thinking, which is a motivated and logical reasoning in reaching the right judgment with ideas, opinions, actions, reasons and evidence, paves the way for raising qualified individuals in educational life by consciously determining acceptance and rejection (Moore & Parker, 2009). In this study, the 3rd grade Life Science textbook was examined through the categories of the critical thinking model put forward by Matthew Lipman and the distribution of these categories according to the units was revealed. The results showed that the philosophically based critical thinking components in the 3rd grade Life Science textbook have different quantitative distributions among the units. However, most of the existing text and activity contents do not carry the critical thinking categories in Lipman's statement. In the textbook, it is seen that the cognitive approach in which students discover and self-regulate themselves and develop a cognitive approach specific to a certain situation is given less space than the categories of criterion formation and judgment formation. When the distribution of the questions and statements in the activities in the 3rd grade Life Science textbook is examined, it can be said that they are concentrated in the categories where students evaluate and make judgments according to criteria. Basically, the individual goes through an evaluation process while reaching the judgment dimension. This process involves evaluating the reliability of sources as well as logical expressions. In this category, the individual evaluates the claims and arguments within the framework of their own opinion and makes a judgment. Hence, judgment formation is a process that involves identifying elements to reach a reasonable conclusion,

forming a hypothesis, and drawing conclusions from data, statements and evidence. This breakdown of activity wording also encompasses students' rational thinking to gather, interpret and evaluate information to reach a judgment (Suhartoyo, 2017).

International studies on the subject emphasize the necessity of critical thinking in primary education (Sarwanto et al., 2021) and the growing popularity of thinking skills in schools (Burke & Williams (2008)) and the importance of integrating them into the subject content of textbooks. Thus, it is possible to provide students with an intuitive understanding based on critical thinking (Paul et al., 1990). In studies, it is stated that the critical thinking levels of primary school students are at an intermediate level (Fajari, 2020), and critical thinking increases when supported with reflective thinking strategy (Nuraini et al., 2020). It has been revealed that the multiple-choice questions in primary school textbooks measure the cognitive aspect of critical thinking more and do not measure the tendencies of critical thinking (Ku, 2009). In national studies, inadequacy of the content has been put forward in various studies on the Life Science curriculum and textbooks. The Life Science curriculum outcomes are insufficient in terms of supporting students' personal development (Peker, 2023). In addition, it is argued that the themes do not sufficiently develop students' problem solving, critical thinking and metacognitive skills (Kökten, 2015). It has been observed that creative and critical thinking, which is among the general objectives of the Life Science course, is limited to beginner-level behaviors such as knowledge and comprehension in terms of developing characteristics such as environmental protection, solidarity and cooperation (Alanç, 2019). Some studies indicate that critical thinking skills are perceived as a form of reasoning focused solely on addressing "why" questions. Furthermore, there is an unequal distribution of content in textbooks, lacking diversity in teaching strategies, methods, and techniques (Akbay, 2017). In another study evaluating the Life Sciences textbooks according to the revised Bloom's taxonomy, it was stated that the learning outcomes were mostly at the “understanding” and “remembering” levels (Kalender & Baysal, 2021).

It was observed in the current study that the activities do not have sufficient time and content for critical thinking. Students' guiding themselves and situations with questions such as why and how requires a certain contextual structure and, most importantly, time. Therefore, teachers have a huge responsibility in terms of being a guide. Understanding, questioning, and thinking skills acquired at an early age are of great importance in developing an inquisitive perspective. This approach is directly related to the "Philosophy for Children (P4C)" theory proposed by Lipman (Kökten, 2023). The MoNE has the same philosophical structure that focuses on human beings and society. Both approaches aim to raise individuals who can produce solutions to problems, criticize, and use knowledge functionally in their lives (Kulkul, 2022). The statements of the teachers working in the textbook writing commissions about critical thinking are that this way of thinking has a knowledge purpose and basis (Nasırcı & Aybek, 2018). However, critical thinking is a cognitive process that is necessary not only for the acquisition of knowledge or philosophy but also for the individual's entire life. Critical thinking should be considered as a skill used in the process of providing an overview of the individual's education and later life, creating cooperation, and expressing ideas (Kuşçu, 2023). In this way, the individual establishes healthier relationships within the community. A more democratic structure is formed in society (Çakır-Kaytancı, 2022). The fact that philosophical thinking involves questioning and that its rules and principles are suitable for critical thinking reveals the strong relationship between philosophy and critical thinking (Alkın- Şahin & Tunca, 2015).

RECOMMENDATIONS

Critical thinking is not a condition that necessarily accompanies human development, but is considered a skill that can be taught and developed through different teaching strategies. In an age where textbooks are rapidly becoming outdated and innovation is constantly taking place in every field, the ultimate and general goals of education, traditional teaching and learning methods, the passive positioning of the learner in the educational environment and the status of being a passive receiver have undergone change. Since the educational needs of present and future generations will not be the same, an infrastructure that will enable learners to think freely, creatively, critically and scientifically is required for the proper education of learners (Woolfolk, 2000). As a whole, it is very important that the tools and materials used in the education system are of a quality that develops critical thinking. In this process, in which teachers are also responsible, concepts, skills and attitudes should be selected in a way that is consistent with the basic goals. Educational goals for raising an inquiring, critical and active individual should be accepted as an important goal in courses taught at all levels and changes should be made in practice.

Declaration of Conflicting Interests

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Statements of publication ethics

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

Researchers' contribution rate

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

Ethics Committee Approval Information

The authors declare that the study was not subject to ethics committee approval and that the rules set by the Committee on Publication Ethics (COPE) were followed throughout the study.

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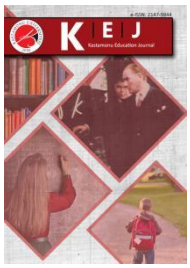

| Research Article / Araştırma Makalesi |

A Study on the Reliability and Validity of the Social Media Leadership Scale in Education Organizations Sample

Sosyal Medya Liderliği Ölçeğinin Eğitim Örgütleri Örnekleminde Geçerlik ve Güvenirlik Çalışması

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Keywords
1. Education organizations
2.Leadership
3.Scale development
4.Social media

Anahtar Kelimeler
1. Eğitim örgütleri
2. Liderlik
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Abstract

Purpose: In this study, it is aimed to develop a Likert-type scale that can measure the status of managers and employees working in organizations in the context of social media leadership in a sample of educational organizations.

Design/Methodology/Approach: The study was conducted on teachers working in schools affiliated with the Ministry of National Education during the 2022–2023 academic year. Expert opinions were sought to ensure the construct validity of the scale. The content validity rates of the items were determined, and the content validity index of the scale was calculated as 0.88. Exploratory Factor Analysis (EFA) and Confirmatory Factor Analysis (CFA) were conducted to test the validity of the scale. KMO and Bartlett tests were used to determine the suitability of the obtained data for factor analysis. The EFA revealed that the scale had a 5-factor structure, which was then confirmed by the CFA. The CFA results were supported by acceptable and excellent fit values. The conformity and validity of the scale and the correlation between the factors were calculated. The internal consistency reliability coefficient was used to determine the reliability of the scale. After the aforementioned procedures, the Social Media Leadership Scale (SMLLS) was developed. The SMLLS consists of 24 items with 5 factors: guidance, innovation, ethical principles, sensitivity, and awareness. The lowest score on the scale is 24, and the highest score is 120.

Findings: The SMLS is a measurement tool developed to determine the leadership levels of social media users. The findings regarding the validity and reliability of the scale indicate that it has sufficient psychometric properties to determine the leadership levels of social media users.

Highlights: This scale can be used to assess the current status of teachers and administrators working at various levels within educational institutions in the context of social media leadership.

Öz

Çalışmanın amacı: Bu araştırmada örgütlerde görev yapan yöneticilerin ve iş görenlerin sosyal medya liderliği bağlamındaki durumlarını ölçebilecek likert tipi bir ölçeğin eğitim örgütleri örnekleminde geliştirilmesi amaçlanmıştır.

Materyal ve Yöntem: Ölçek geliştirme çalışması 2022-2023 eğitim öğretim yılında Milli Eğitim Bakanlığına bağlı okullarda görev yapan öğretmenler üzerinde gerçekleştirilmiştir. Ölçeğin kapsam geçerliğinin sağlanması amacıyla uzman görüşlerine başvurulmuştur. Bu değerlendirmenin ardından maddelerin kapsam geçerlik oranları belirlenmiş ve ölçeğin kapsam geçerlik indeksi .88 olarak hesaplanmıştır. Ölçeğin geçerliği için Açımlayıcı Faktör Analizi (AFA) ve Doğrulayıcı Faktör Analizi (DFA) gerçekleştirilmiştir. Elde edilen verilerin faktör analizi açısından uygunluğunun tespit edilmesi amacıyla KMO ve Bartlett testleriyle sınanmıştır. AFA ile ölçeğin 5 faktörlü bir yapıda olduğu belirlenmiştir. Sonrasında AFA ile ortaya çıkan 5 faktörlü yapı DFA ile doğrulanmıştır. DFA sonuçlarının uygunluğu ve yeterliği kabul edilebilir ve mükemmel uyum değerleriyle desteklenmiştir. Ölçeğin uyum geçerliği, faktörler arasındaki korelasyon hesaplanmıştır. Ölçeğin güvenirliği ise iç tutarlılık güvenirlik katsayısı hesaplanarak belirlenmiştir. Söz konusu işlemlerin ardından yönlendirme, yenilikçilik, etik ilkeler, duyarlılık ve farkındalık olmak üzere 5 faktörlü ve 24 maddeden oluşan Sosyal Medya Liderliği Ölçeği (SMLÖ) geliştirilmiştir. Ölçekteki en düşük puan 24, en yüksek puan ise 120'dir.

Bulgular: SMLÖ sosyal medya kullanıcılarının sosyal medyadaki liderlik düzeylerini belirlemek amacıyla geliştirilmiş bir ölçme aracıdır. Ölçeğin geçerliğine ve güvenirliğine dair elde edilen bulgular, bu ölçeğin sosyal medya kullanıcılarının liderlik düzeylerini belirleme konusunda yeterli psikometrik özelliklere sahip olduğunu göstermektedir.

Önemli Vurgular: Bu ölçek eğitim örgütlerinde farklı kademelerde çalışan öğretmenlerin ve yöneticilerin sosyal medya liderliği bağlamındaki mevcut durumlarını ortaya koymak için kullanılabilir.

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INTRODUCTION

"Social media" refers to online platforms that enable individuals to share their thoughts, exchange experiences, and build connections through various forms of content, such as messages or photos (Eraslan, 2020). The rise of social media, including social networking sites, has become popular with the advancement of Web 2.0 technology in the 2000s, allowing businesses to conduct operations, such as public relations, marketing, and advertising, on the internet (Güçdemir, 2017). Organizations can benefit from social media strategies to gain insights from their stakeholders. Real-time communication can speed up decision-making for leaders by helping them quickly obtain relevant information. Companies can use social media platforms to promote products and services, interact with customers, and foster connections with employees (Kaur et al., 2015). Many organizations also strive to boost employee motivation and engagement using social media platforms. Additionally, social media can serve as a means of internal communication within organizations (Schiff, 2014).

Social media allows employees to freely share their work experiences within an organization, as well as discover new opportunities in their chosen industry (Chesbrough, 2011). Managers can gather information on employee attitudes toward the organization and their work based on employees' online posts (Kaur et al., 2015). Furthermore, organizations that employ social media strategies can gain a competitive edge in effectively engaging with stakeholders. Real-time communication allows decision-makers to quickly collect pertinent information and incorporate it into their decision-making process (Jucan et al., 2013).

The utilization of social media platforms by organizations presents both advantages and potential drawbacks that can result in shifts in managerial practices. The implementation of social media tools that facilitate interaction and networking has brought about modifications in leadership styles within organizations. For instance, a study by Haider et al. (2016) in China discovered that social media has increased the likelihood of public officials adopting transformational leadership behaviors. Furthermore, Carboni and Maxwell (2015) observed that numerous non-profit organizations have adapted their leadership approach to encompass effective engagement on social media platforms. Pallikara (2021) also disclosed that amid the COVID-19 pandemic, leaders have adjusted their communication style to effectively engage with their followers.

As noted by Haslam et al. (2011), effective leaders play a crucial role in motivating and empowering followers to take proactive measures and assume responsibility in response to evolving social circumstances. The success of this transition hinges on how followers perceive the leader within their group (Steffens et al., 2014). The social identity approach provides insight into the attitudes of followers during this process, suggesting that leaders can convert individual efforts into collective action by fostering a shared sense of social identity (Reicher et al., 2005). Therefore, it is expected that leaders perceived by their followers as part of their group within organizations will have greater influence. Additionally, according to the social identity approach, leaders are involved in clarifying and shaping followers' understanding of the organization by establishing its standards and objectives (Haslam et al., 2011). Moreover, various leadership theories and methods, including transformational leadership, situational leadership, and leader-member exchange (LMX), highlight the importance of establishing relationships and connecting with followers. Therefore, leadership is a process centered on building connections with individuals (Bass & Bass, 2009). From this viewpoint, it can be argued that effective communication between leaders and their followers via social media is crucial for those in leadership positions within organizations.

The current body of literature demonstrates a notable surge in research focusing on leaders' utilization of social media across various fields in recent years. These fields encompass business and management (Fei, 2024), healthcare management (Naidoo et al., 2018), sociology (Yates & Lockley, 2018), public relations (Luo et al., 2015), and education (Bal et al., 2015). Nevertheless, it is crucial to acknowledge that the concept of social media leadership remains inadequately addressed in existing literature, with no extensive developmental study on this subject. In this context, the present study seeks to elucidate the dimensions of social media leadership within educational institutions. To achieve this objective, an initial discussion on the conceptual underpinnings of social media leadership is warranted.

Social Media Leadership

In the past two decades, the use and significance of social media have significantly increased. For instance, as of 2015, around 65% of American adults were reported to be using social media platforms for information exchange, marking a nearly tenfold increase within the last decade (Perrin, 2015). Furthermore, the emergence of social media applications in recent years has altered face-to-face interactions toward online relationships. Consequently, the ability to make offline friends has become a factor in achieving success in life (Palalic et al., 2022). Some studies have indicated that expressing emotions and thoughts through online platforms contributes to the formation of psychological groups and the development of associated norms, resulting in collective action (Bliuc et al., 2007; Foster, 2019). Notably, certain social media platforms such as Instagram and TikTok have replaced the option of making online friends with a "following" feature, leading to some users amassing more followers than others. This has caused these individuals to be viewed as opinion leaders (Casalo et al., 2020). Consequently, organizations and communities have become more involved in social media platforms, allowing them to carry out administrative processes more efficiently and rapidly while also maintaining and strengthening communication with their followers (McCorkindale & Distaso, 2014). However, it is crucial for leaders directing the communication processes of organizations and groups to acknowledge their significant responsibility in this context.

In recent research, it has been found that various types of leaders, including religious, business, and educational leaders, are increasingly interested in using social media (Matthews et al., 2022). This trend has led to a growing focus on how leaders can effectively use social media in their leadership approaches. Studies have highlighted the significance of leaders' proficient use of social media platforms. These platforms can help leaders in numerous ways, including motivating followers, engaging in conversations, communicating with stakeholders, and managing their public image (Ahlquist, 2014; Barnes & Hersh, 2012; Christopoulos, 2016; Davis et al., 2014; Gruber et al., 2015; Kaplan & Haenlein, 2010). Furthermore, research has suggested that leaders should utilize social media as a tool for direct and sincere communication with their followers, protecting their reputation, building a positive public image, and mobilizing supporters (Alghawi et al., 2014; Chandler & Munday, 2011; Jiang et al., 2017; Luo et al., 2015; Peltier, 2021).

Social media interaction has both positive and negative aspects. While it can connect people and spread information, it also has a dark side. Social media can put individuals, communities, companies, and even society at risk. Cyberbullying, addictive use, trolling, fake news, and privacy breaches are some examples of the negative impact of social media according to Baccarella et al. (2018). Leaders need to be mindful of this dark side of social media when managing their organizations or communicating with their audiences.

The concept of social media leadership has gained prominence, especially in significant social movements such as the Arab Spring (Uysal et al., 2021). However, research on this topic often focuses on the relationship between social media and leadership (Asghar et al., 2023; Billington & Billington, 2012; Chen et al., 2021; Heavey et al., 2020). This gap in the literature has motivated the undertaking of this study. The dimensions of the social media scale developed within the scope of this research are outlined in Figure 1.

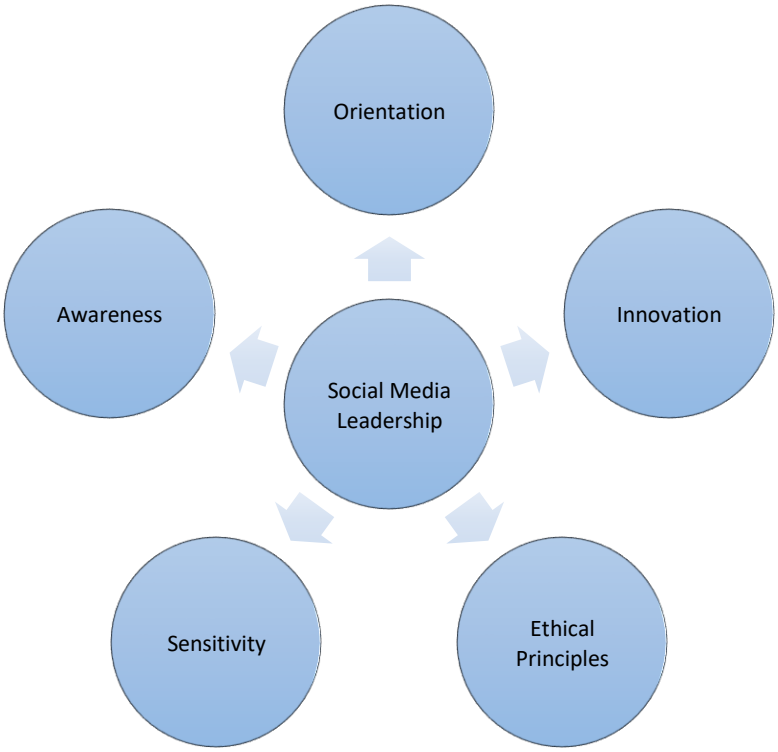

Figure 1. Dimensions of social media leadership

As per Figure 1, social media leadership comprises five dimensions: orientation, innovation, ethical principles, sensitivity, and awareness. These dimensions were developed based on the fundamental qualities of leadership (Erçetin, 2000). Therefore, a social media leader should possess traits that guide their followers (Dukhaykh, 2021; Goleman, 2018; Lalancette & Raynauld, 2017; Lindholm et al., 2020). A social media leader serves as an example to their followers, keeps them informed, and influences their thoughts and behaviors. Moreover, a social media leader should demonstrate innovativeness (Bance & Briones, 2023; Dargan & Shucksmith, 2008; Newman et al., 2017; Rehmani et al., 2023). This entails closely following platform innovations, utilizing new features and applications, expanding their network through new social media platforms, making simultaneous posts across various applications, striving for effective social media usage, and seeking professional support as needed. Additionally, social media leaders are highly mindful of ethical considerations (Krishnan, 2023; Middlebrooks et al., 2009). In this regard, they should be cautious about their language use, refrain from claiming others' content as their own, and abstain from following accounts that share illegal content. Furthermore, social media leaders should also display sensitivity (Akdevelioğlu & Kara, 2020; Gruda et al., 2021; Shore, 2006).

In the realm of social media, influential figures often impart their perspectives to their followers, providing both inspiration and valuable information during tumultuous periods. Remaining abreast of accurate information, current events, and emerging trends holds significant importance (Martínez-Córcole, 2018; Yue et al., 2023; Yousefinaghani et al., 2022). Consequently, these social media figures perceive the platform as a means to bolster individuals' social capital, granting them heightened influence and recognition in the physical realm, and consider it pivotal in shaping public opinion effectively. Within this framework, the present study seeks to scrutinize the psychometric properties of the social media leadership scale within educational institutions. The study will address the following sub-issues:

1. Does the social media leadership scale validly measure the leadership characteristics of social media users in a sample of educational organizations?

2. Does the social media leadership scale reliably measure the leadership characteristics of social media users in a sample of educational organizations?

METHOD

This study aims to develop the Social Media Leadership Scale (SMLS) in educational organizations, as outlined in the research conducted by Gliner et al. in 2016. The methodology section of the research presents the stages of the scale development process and details the characteristics of the research sample.

Research Sample

The study sample includes teachers working in schools affiliated with the Ministry of National Education during the 2022-2023 academic year. This sample consisted of randomly selected and accessible teachers. In this context, 322 teachers were reached for Exploratory Factor Analysis and 340 teachers for Confirmatory Factor Analysis. Information about the first and second samples used in this research is provided in Table 1.

Table 1. Information on the Research Sample

Sample	Gender	Frequency(f)	Percent (%)
First Sample	Female	199	%61,8
	Male	123	%38,2
	Total	322	%100
Second Sample	Female	231	%67,9
	Male	109	%32,1
	Total	340	%100

When analyzing Table 1, it can be observed that the first sample of the research comprised 322 teachers, with 61.8% being female and 38.2% being male. Additionally, the second sample consisted of 340 teachers, with 67.9% being female and 32.1% being male.

Scale Development Process

The process of scale development follows a set of standard steps outlined by AERA, APA, & NCME (2014), DeVellis & Thorpe (2022), Malhotra (2006), and Simms (2008). Accordingly, the scale development process was executed by adhering to the following steps.

Identifying the Characteristics of the Construct to be Measured: In order to identify all the attributes of the construct to be measured, a review of national and international literature was conducted using keywords such as "social media," "social media leadership," and "social media leadership scale." While many sources related to social media were found, there were not enough sources specifically related to the concepts of social media leadership and social media leadership scale. Therefore, in determining the characteristics of the construct to be measured, the dynamics of social media were blended with the specific characteristics of the concept of leadership.

Creation of the Item Pool: An item pool consisting of 44 items was created to assess the social media leadership of employees within organizations after identifying all the features of the construct to be measured. Care was taken to ensure that the items were concise, clear, and unambiguous.

Submission of the Item Pool to Expert Opinion: Prior to seeking expert opinion, the researchers conducted an analysis of 44 items in the item pool. Following this analysis, they made the decision to consolidate certain items that assessed similar traits, ultimately reducing the item pool to 42 items. This consolidation was necessary as two of the combined items measured scenarios that could be viewed as opposing each other in the Orientation dimension. Additionally, two other items were merged due to their proximity in the ethical principles sub-dimension of social media leadership. Opinions from six leadership and communication experts, a measurement and evaluation expert, and a Turkish language and literature expert were sought. The experts evaluated

the items as "measures what is desired," "relevant but unnecessary," and "does not measure what is desired," to calculate the content validity ratios (CVR) and the content validity index (CVI). After removing 5 items with a CVR value less than .75, the CVI was calculated as .88, indicating good content validity. According to Batdı (2013), a CVI value greater than the CVI indicates good content validity. Hence, the remaining 37 items in the item pool were considered to have significant content validity.

Pretesting the Measurement Tool: Following expert advice, 10 teachers personally pretested 37 items from the item pool. During this process, the answering behaviors of the participants were examined, and no problems were identified. The average time taken by each respondent was calculated to be 3 minutes.

Application of the Measurement Instrument to the Sample: After the pretest, 37 items were administered to 322 teachers for exploratory factor analysis (EFA). According to Çokluk et al. (2012), scale development studies should be conducted with a minimum of 300 participants. In this regard, it is evident that the sample size is sufficient for factor analyses. The items in the scale were rated on a five-point Likert scale as follows: (1) Strongly Disagree, (2) Disagree, (3) Undecided, (4) Agree, (5) Strongly Agree.

Analyzing the Data

The Microsoft Excel program was used to calculate the CSR and CGI values based on expert opinions of the items in the item pool. Additionally, an exploratory factor analysis (EFA) was conducted using the SPSS 26 package, and confirmatory factor analysis (CFA) was performed using the AMOS package.

Research Ethics

For the data collection process carried out during the scale development, ethics committee permission for the research was granted by the Bayburt University Ethics Committee Senate in a meeting dated June 20, 2023, numbered 229.

FINDINGS

Findings Related to the Validity of the Scale

In the scope of the research, EFA and CFA methods were used to examine the construct validity of the SMLS.

Findings Related to Exploratory Factor Analysis

Before conducting the exploratory factor analysis (EFA), Kaiser-Meyer-Olkin (KMO) test, which assesses the sampling adequacy, and Bartlett's test of sphericity, used to determine the suitability of the data for factor analysis, were performed (Akdağ, 2011). According to the results of these tests (KMO = .872, Bartlett's Test of Sphericity = 5302.497, df = 666, p = .000), it was established that the data were suitable for factor analysis (Büyüköztürk, 2014; Şencan, 2005). Subsequently, exploratory factor analysis (EFA) was initiated, and the obtained factors were subjected to axis rotation. Varimax, a common orthogonal rotation technique, was used in this study to reveal which items had a higher correlation with the factors (Büyüköztürk, 2014, p. 136; Özdamar, 1999, p. 247). After subsequent exploratory factor analyses, 13 items that did not meet the criteria were eliminated, and the remaining 24 items were reanalyzed. Additionally, the scree plot graph was analyzed to confirm the number of factors on the scale.

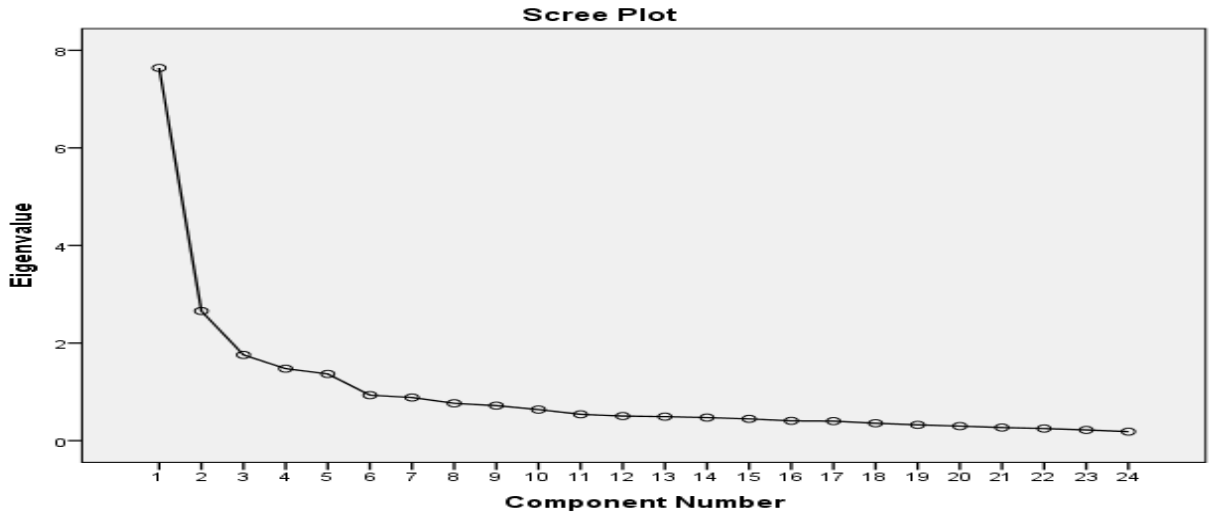

Figure 2. Secree Plot Graph of SMLS

The findings from Figure 2 indicated a horizontal shift in the line's slope after the 6th point. Upon counting the point intervals until that point, it was discovered that the scale had five factors. A content analysis was conducted on the distribution of items among the factors, resulting in the following names: orientation (comprised of 8 items: 7, 8, 9, 10, 13, 14, 15, 18), innovation (comprised of 6 items: 23, 24, 25, 26, 27, 29), ethical principles (comprised of 4 items: 33, 34, 35, 37), sensitivity (comprised of 3

items: 2, 5, 6), and awareness (comprised of 3 items: 1, 3, 4). Following the exploratory factor analysis (EFA), the sub-dimensions of the 24-item SMLS and the factor loadings of the items are presented in Table 2.

Table 2. Information on the Sub-Dimensions of the SMLS (N=322)

Items	Communalities	Orientation	Innovation	Ethical Principles	Sensitivity	Awareness
14	0,680	0,805				
10	0,682	0,799				
13	0,654	0,778				
8	0,690	0,764				
9	0,665	0,762				
7	0,647	0,747				
15	0,546	0,685				
18	0,554	0,578				
25	0,672		0,781			
24	0,661		0,738			
29	0,584		0,717			
26	0,559		0,672			
27	0,690		0,671			
23	0,582		0,666			
35	0,719			0,840		
34	0,689			0,823		
33	0,498			0,687		
7	0,494			0,547		
6	0,480				0,813	
5	0,597				0,714	
2	0,463				0,629	
3	0,709					0,818
1	0,671					0,783
4	0,480					0,576
KMO=0,872						
Bartlett Sphericity Test= 5302,497; p= .000						
Eigenvalue		7,639	2,657	1,758	1,476	1,367
Variance Explanation Ratio = (%)62,072 (Total)		20,862	15,434	9,557	8,588	7,631
Cronbach Alpha= 0,893 (Total)		0,913	0,865	0,736	0,661	0,653

**Note: Factor loadings below .30 are not shown here.*

Based on the findings in Table 2, it was observed that the item factor loadings ranged between 0.576 and 0.840. The exploratory factor analysis (EFA) revealed that the scale comprised a total of 24 items and had a 5-factor structure. Furthermore, it was found that the total explained variance level was 62.072%. Kline (1994) suggested that a total variance explanation of 40% or higher is an important indicator for the construct validity of the scale. Consequently, it can be concluded that the scale demonstrated good construct validity.

Table 3. Correlation Matrix Between Factors

	Orientation	Innovation	Ethical Principles	Sensitivity	Awareness
Orientation	1	,524**	,234**	,253**	,401**
Innovation		1	***,060***	,301**	,479**
Ethical Principles			1	,300**	,249**
Sensitivity				1	,378**
Awareness					1

In the analyses conducted during the research process, the relationship between the sub-dimensions of the scale was examined, and the correlation coefficients between the factors are presented in Table 3. Upon analyzing the table, it is evident that there is no relationship between the dimensions of ethical principles and innovativeness, but there is a relationship between the other dimensions. Consequently, it can be concluded that the factors have a positive and significant relationship with each other, except for the relationship between these two dimensions.

Findings Related to Confirmatory Factor Analysis

Due to the potential of obtaining misleading findings, it is recommended by researchers to use different samples for EFA and CFA (Çokluk et al., 2012; Henson & Roberts, 2006). Accordingly, CFA was conducted to test the five-factor and 24-item structure of the SMLS, utilizing data from a new sample comprising 316 participants. The t values for explaining the observed variables as latent variables were found to be significant at the .01 level for the 5-factor model (Çokluk et al., 2012), suggesting that there were no serious issues in the tested model. Table 4 presents a comparison of the goodness-of-fit values obtained before and after the model modification.

Table 4. CFA Fit Indices of the SMLS (N=340)

Goodness of fit values	Perfect	Acceptable	Finding before modification	Finding after modification
X^2/sd	0-2,5	2,5-3	2.802	2.081
RMSEA	≤ 0,05	≤ 0,08	.076	.059
RMR	≤ 0,05	≤ 0,08	.066	.060
SRMR	≤ 0,05	≤ 0,08	.070	.057
NFI	≥ 0,95	≥ 0,90	.82	.87
CFI	≥ 0,95	≥ 0,90	.84	.92
IFI	≥ 0,95	≥ 0,90	.87	.93
GFI	≥ 0,90	≥ 0,85	.84	.89
AGFI	≥ 0,90	≥ 0,85	.81	.86

When Table 4 is examined, it is seen that the NFI value is .87. Hooper et al. (2008) stated that NFI values up to .80 are acceptable. In this respect, the values presented in the table regarding the goodness of fit are described as “excellent” and “acceptable” according to the generally accepted criteria in the relevant literature (Çokluk et al., 2012; Seçer, 2013; Şimşek, 2007). This is also shown in the path diagram in Figure 3.

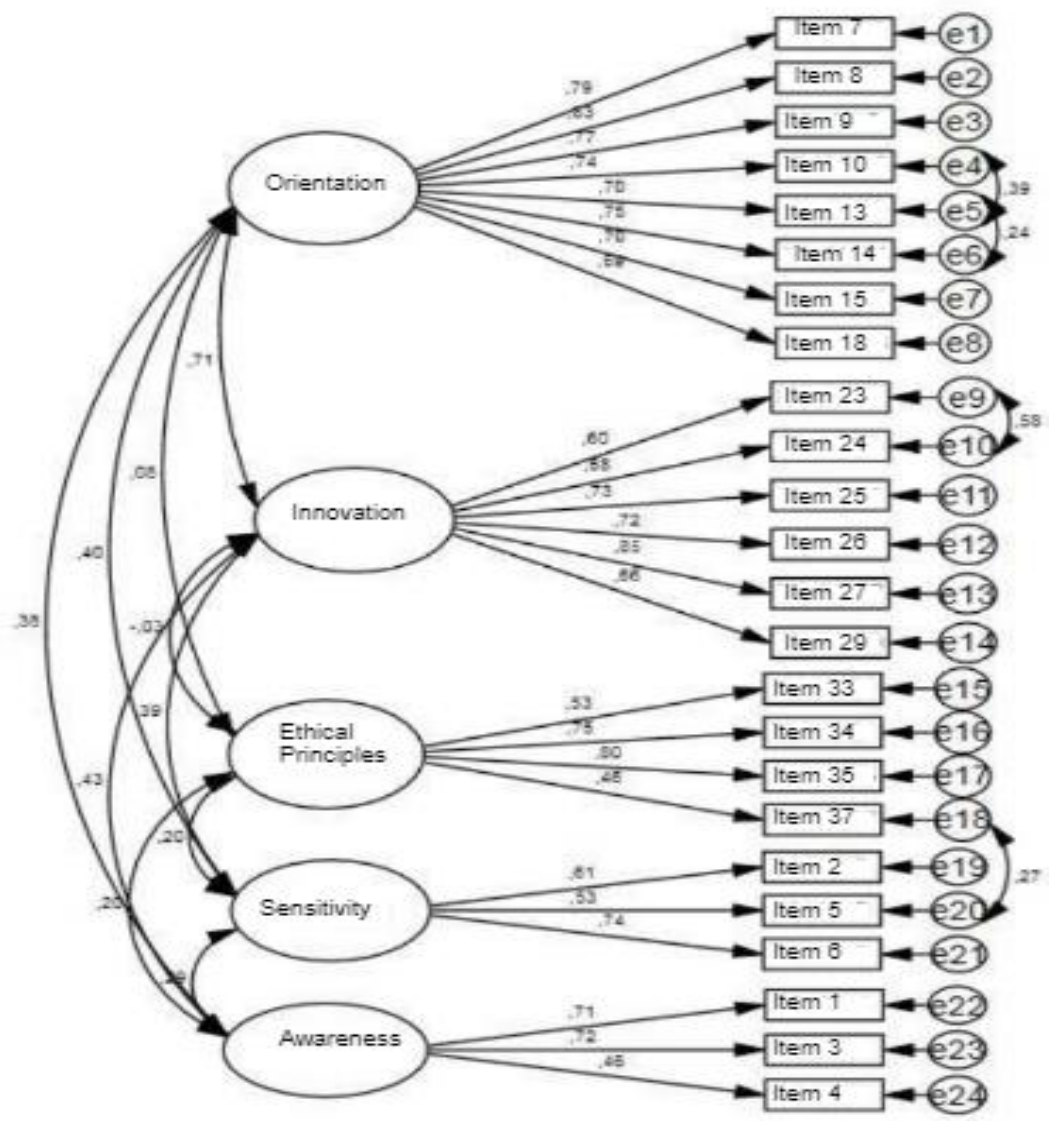

Figure 3. Path Diagram of SMLS

When examining Figure 3, it is observed that the factor loadings of the SMLS model range between .46 and .85.

Findings Related to Reliability

Based on the data obtained in the pilot applications, the reliability of the 5-factor model after both EFA and CFA was tested by calculating the Cronbach's Alpha value. The Cronbach's Alpha reliability coefficients for the internal consistency of the data from the scale after EFA were calculated as 0.91 for the orientation factor, 0.87 for the innovation factor, 0.73 for the ethical principles factor, 0.66 for the sensitivity factor, and finally 0.65 for the awareness factor. Additionally, the reliability coefficient for the overall scale was calculated at 0.893.

After CFA, Cronbach's Alpha reliability coefficients were calculated as 0.90 for the orientation factor, 0.89 for the innovation factor, 0.72 for the ethical principles factor, 0.78 for the sensitivity factor, and finally 0.75 for the awareness factor. Additionally, the reliability coefficient for the overall scale was calculated at 0.898. Scales with reliability values of .70 and above are considered to have sufficient reliability in scale development processes (Büyüköztürk, 2014; Seçer, 2013). Therefore, considering the values obtained as a result of the analyses, it can be concluded that the scale is reliable.

CONCLUSION AND RECOMMENDATIONS

The concept of social media, which was first used in the literature in 1994, has evolved into one of the most significant applications of the Internet over time (Aichner et al., 2021). With adults in OECD countries spending an average of 4-6 hours on online platforms (Ortiz-Ospina, 2019), the profound impact of social media in people's lives is more apparent. According to some researchers, social media, by facilitating the communication of users from diverse backgrounds (Kapoor et al., 2018), is reshaping group interaction and the individual and collective behaviors of people worldwide (Dhir et al., 2018; Tateno et al., 2019). The influential power of social media has underscored the necessity of establishing the concept of "social media leadership" on a scientific basis. Hence, this study aimed to address the gap in the literature by developing the Social Media Leadership Scale

(SMLS). The scale consists of 5 factors and 24 items, namely orientation, innovation, ethical principles, sensitivity, and awareness, with a score range from 24 to 120. The content validity of the scale was ensured through expert opinions, and content validity ratios (CVR) of the items and the content validity index (CVI) of the scale were calculated. Moreover, the Kaiser-Meyer-Olkin (KMO) and Bartlett's tests were employed to assess data suitability for factor analysis. The exploratory factor analysis (EFA) confirmed the 5-factor structure of the scale. Subsequently, the 5-factor structure was validated through confirmatory factor analysis (CFA), which yielded acceptable and excellent fit values. The reliability of the scale was established through the calculation of the internal consistency reliability coefficient.

SMLS is a measurement tool developed to assess the leadership levels of social media users. The scale's validity and reliability findings suggest that it possesses adequate psychometric properties to evaluate the leadership levels of social media users. Hence, this scale can be used to assess the current status of teachers and administrators working at various levels within educational institutions in the context of social media leadership.

Declaration of Conflicting Interests

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Statements of publication ethics

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

Researchers' contribution rate

The first author contributed to writing the scale items, formulating the problem statement of the article, and collecting the data. The second author performed the data analysis, while both authors collaborated on writing the discussion and recommendations section.

Ethics Committee Approval Information

Ethical committee approval for this study was obtained from the Ethics Committee of Bayburt University (Number of Decisions:229; Date: 26.03.2023).

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Appendix 1: Social Media Leadership Scale (SMLS)

Row	Factor	Items	1	2	3	4	5
1	Awareness	I think that social media is an important tool for expanding people's social circles.					
3		I believe that using social media will increase people's power in terms of real-life recognition.					
4		I think that social media should be used effectively to form public opinion.					
2	Sensitivity	I believe that social media should be used to serve a specific purpose.					
5		I believe that the people I follow on social media should have certain characteristics.					
6		I support the planned use of social media.					
7	Orientation	My followers take me as an example on social media.					
8		My social media posts have an impact on my followers.					
9		My followers share my posts on my social media accounts.					
10		The opinions I express on social media are supported by my followers.					
13		My followers defend the ideas I present in my social media posts.					
14		My social media posts encourage my followers to think differently.					
15		My social media posts have an impact on my followers' happiness.					
18		My social media posts get a lot of attention from my followers.					
23	Innovation	I closely follow innovations in social media applications.					
24		I pay attention to using newly added features in social media applications.					
25		I expand my network by joining new social media platforms.					
26		I share my opinions simultaneously on all social media accounts I use.					
27		I make efforts to use social media applications more effectively.					
29		I try to use new social media applications, at least as actively as my other social media accounts.					
33	Ethical Principles	I am careful not to share the content of other people's posts with users as my own opinion.					
34		I prefer not to like accounts that share information and documents with questionable accuracy.					
35		I prefer not to follow accounts that share information and documents of questionable accuracy.					
37		I avoid behaviors that may violate the privacy of people's private lives on my social media accounts.					

1: Strongly Disagree, 2: Disagree, 3: Undecided, 4: Agree, 5: Strongly Agree

Appendix 2: Turkish Version of Social Media Leadership Scale (SMLS)

Sıra	Boyut	Maddeler	1	2	3	4	5
1	Farkındalık	Sosyal medyanın kişilerin sosyal çevrelerini genişletmede önemli bir araç olduğunu düşünürüm.					
3		Sosyal medya kullanmanın gerçek hayatta kişilere tanınırlık açısından güç katacağına inanırım.					
4		Sosyal medyanın kamuoyu oluşturmada etkili bir şekilde kullanılması gerektiğini düşünürüm.					
2	Duyarlılık	Sosyal medyanın belirli bir amaca hizmet etmek amacıyla kullanılması gerektiğini düşünürüm.					
5		Sosyal medyada takip ettiğim kişilerin belirli özelliklere sahip olmaları gerektiğine inanırım.					
6		Sosyal medyanın planlı bir şekilde kullanılması gerektiğini savunurum.					
7	Yönlendirme	Sosyal medyada takipçilerim beni örnek alır.					
8		Sosyal medyadaki paylaşımlarım takipçilerimi etkiler.					
9		Sosyal medya hesaplarımdaki paylaşımlarım takipçilerim tarafından paylaşılır.					
10		Sosyal medyada dile getirdiğim görüşler, takipçilerim tarafından desteklenir.					
13		Sosyal medya paylaşımlarımda ileri sürdüğüm fikirler takipçilerim tarafından savunulur.					
14		Sosyal medya paylaşımlarım takipçilerimin farklı düşünmesine katkı sunar.					
15		Sosyal medya paylaşımlarım takipçilerimin mutlulukları üzerinde etkili olur.					
18		Sosyal medyadaki paylaşımlarım takipçilerimden yoğun bir etkileşim alır.					
23	Yenilikçilik	Sosyal medya uygulamalarındaki yenilikleri yakından takip ederim.					
24		Sosyal medya uygulamalarına yeni eklenen özellikleri kullanmaya özen gösteririm.					
25		Yeni sosyal medya uygulamalarına üye olarak ağımı geliştiririm.					
26		Görüşlerimi kullandığım tüm sosyal medya hesaplarından eş zamanlı olarak paylaşırım.					
27		Sosyal medya uygulamalarını daha etkili bir şekilde kullanmak için çaba gösteririm.					
29		Yeni çıkan sosyal medya uygulamalarını da en az diğer sosyal medya hesaplarım kadar aktif kullanmaya çalışırım.					
33	Etik İlkeler	Başkalarının paylaşımlarındaki içerikleri kendi görüşlerim olarak kullanıcılarla paylaşmamaya dikkat ederim.					
34		Doğruluğu şüpheli olan bilgi ve belgeleri paylaşan hesapları beğenmemeyi tercih ederim.					
35		Doğruluğu şüpheli olan bilgi ve belgeleri paylaşan hesapları takip etmemeyi tercih ederim.					
37		Sosyal medya hesaplarımda kişilerin özel hayatlarının gizliliğini ihlal edebilecek davranışlardan uzak dururum.					

1: Kesinlikle Katılmıyorum, 2: Katılmıyorum, 3: Kararsızım, 4: Katılıyorum, 5: Kesinlikle Katılıyorum

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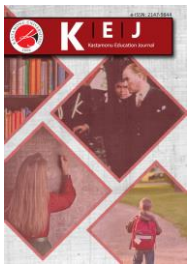

| Research Article / Araştırma Makalesi |

The Evolution of Theories, Transformations, and Emerging Trends in Distance Education Worldwide: A Comprehensive Research Article

Küresel Bağlamda Uzaktan Eğitim Teorilerinin, Dönüşümlerinin ve Ortaya Çıkan Yeni Eğilimlerin Gelişimi: Kapsamlı Bir Araştırma Makalesi

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Keywords

1.Distance Education
2.Emerging Trends in Distance Learning
3.The Evolution of Distance Education
4.Changes in Distance Education
5.Psychological Theories for Distance Education

Anahtar Kelimeler

1.Uzaktan Eğitim
2.Uzaktan Eğitimde Yeni Eğilimler
3.Uzantan Eğitimin Evrimi
4.Uzaktan Eğitimdeki Değişimler
5.Uzaktan Eğitim İçin Psikolojik Teoriler

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Abstract

Purpose: The fundamental objective of the current comprehensible research article is to dwell on the developmental and historical process, theoretical approaches and foundations, along with technological improvements of newly emerging trends in distance education. Furthermore, the study puts a great deal of emphasis on the most significant psychological theories such as behaviorism, cognitivism, and constructivism and in what ways they can contribute to the effectiveness of distance education platforms. The study also explores the theoretical foundations such as systems theory, communication theory and media theory along with a focus on connectivism to comprehend distance education with a careful assessment on the integration of the emerging technological advancements such as artificial intelligence, virtual reality, and augmented reality by revealing their transformative impacts and the potential on distance education. Henceforth, to accomplish such an aim, the current article provides a comprehensive analysis of distance education and offers a collection of insights into distance education for teachers, policymakers and other researchers in the relevant field.

Design/Methodology/Approach: The current article employs a literature review as a research method to assess and evaluate the essential existing research body and to obtain definitive, evidence-based, practical, compelling and persuasive data within the relevant field of distance education from a constructivist perspective to find a clear answer to the research questions.

Findings: The current study accentuates and finds that the improvements in technology, particularly, the Internet and fiber optics, have a transformative impact on distance education by improving interactivity and accessibility. Distance education seems to have evolved from corresponding with letters to sophisticated online platforms, enhancing global accessibility and overcoming challenges and obstacles. Psychological theories such as behaviorism, cognitivism, and constructivism are of high importance in optimizing learning experiences in this technological era.

Highlights: The study highlights that the emerging trends in technology, comprising virtual reality (VR), augmented reality (AR), and artificial intelligence (AI), have a profound transformative effect on distance education by improving interactivity, visualization, and individualized learning experiences. VR and AR offer immersive, 3D settings that enhance involvement, engagement and understanding, whereas AI grands individualized learning and assessments, reshaping traditional educational methods and enhancing access to effective and productive learning opportunities.

Öz

Çalışmanın amacı: Bu kapsamlı araştırma makalesinin amacı uzaktan eğitim kavramının gelişimsel ve tarihsel sürecini teknolojik gelişmelerle birlikte ortaya çıkan popular eğitimlere odaklanarak sunmakla birlikte davranışçı, bilişselcilik ve yapılandırmacılık gibi önemli psikolojik teorilere vurgu yaparak bu teorilerin uzaktan eğitim platformlarının verimliliğine nasıl katkı sağlayacağı ve nasıl kullanılacağı üzerinde durmaktadır. Ayrıca makale çalışması sistemler teorisi, iletişim teorisi ve medya teorisi gibi teorik temeller ile öğrenmede bağlantıcılık teorisiyle birlikte yapay zekâ, sanal gerçeklik ve artırılmış gerçeklik gibi ortaya çıkan teknolojik gelişmelerin entegrasyonuna ilişkin bir analiz yapıp bu gelişmelerin uzaktan eğitim ortamları üzerindeki dönüştürücü ve destekleyici etkisini ortaya koymaya çalışmıştır. Bu amaç doğrultusunda, bu araştırma makalesi uzaktan eğitimin tarihsel boyutu üzerinde kapsamlı bir analiz sunmakla birlikte öğretmenlere, politika oluşturuculara ve ilgili alandaki diğer araştırmacılar için uzaktan eğitime dair öneriler sağlamayı amaçlamaktadır.

Materyal ve Yöntem: Çalışma veri toplama ve analizi için literatür taramasını araştırma yöntemi olarak uygulamıştır.

Bulgular: Mevcut çalışma, özellikle İnternet ve fiber optik olmak üzere teknolojideki gelişmelerin, etkileşimi ve erişilebilirliği iyileştirerek uzaktan eğitim üzerinde dönüştürücü bir etkiye sahip olduğunu vurgulamaktadır. Uzaktan eğitim, mektuplarla yazışmaktan gelişmiş çevrimiçi platformlara evrilerek küresel erişilebilirliği artırmış ve engelleri aşmıştır. Davranışçılık, bilişselcilik ve yapılandırmacılık gibi psikolojik teoriler, bu teknolojik çağda öğrenme deneyimlerini optimize etmede büyük önem taşımaktadır.

Önemli Vurgular: Çalışma, sanal gerçeklik (VR), artırılmış gerçeklik (AR) ve yapay zekayı (AI) içeren teknolojideki ortaya çıkan eğilimlerin, etkileşimi, görselleştirmeyi ve kişiselleştirmiş öğrenme deneyimlerini iyileştirerek uzaktan eğitim üzerinde derin bir dönüştürücü etkiye sahip olduğunu vurgulamaktadır. VR ve AR, katılımı, etkileşimi, AI, geleneksel eğitim yöntemlerini yeniden şekillendirerek etkili ve üretken öğrenme fırsatlarına erişimi geliştirerek kişiselleştirilmiş öğrenme ve değerlendirmelerini teşvik eder.

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INTRODUCTION

In today's world, humanity faces unprecedented demands in meeting its myriad needs, necessitating a departure from traditional educational approaches ill-suited to contemporary developments and requirements. The swift emergence of information and communication technologies is claimed to have fundamentally reshaped our work dynamics, facilitating learning even while on the move. Indeed, these technological advancements have exerted a profound influence across various facets of societal existence, notably within the realm of education (Akpınar, 2003). Currently, there exists a concerted endeavour to integrate communication technologies into educational frameworks. This is primarily due to their capacity to optimize the efficient deployment of educational resources, impart flexibility to learning environments, and enhance the overall quality of education. In this context, emphasis is notably placed on distance education, a mode of learning where learners and educators are geographically separated, inhabiting different physical locations, and instruction is delivered utilizing diverse technologies (Bruder, 1989). Distance education is bifurcated into asynchronous and synchronous learning modalities (Nasrullah, 2014). Asynchronous distance education hinges on interactions between teachers and students at varied times, encompassing activities such as learning from printed directives, listening to recorded lectures, or viewing pre-recorded visual tutorials at flexible intervals. Conversely, synchronous learning necessitates real-time engagements, including activities like listening to live radio broadcasts or participating in live online classes (Shahabadi, 2015). Naturally, asynchronous distance learning predates its synchronous counterpart, owing to recent advancements in communication technologies enabling the latter's feasibility (Mayadas, 1997). Both methods have garnered popularity with the selection of appropriate teaching methods contingent upon the knowledge that learners aim to acquire. Occasionally, a blend of synchronous and asynchronous teaching approaches is employed. Modern distance education leverages computers and the internet as principal distribution channels, with a substantial majority of course content—typically 80%—delivered online (Allen, 2011).

As commonly acknowledged, until recently, individuals were obliged to physically attend classes and successfully pass entrance examinations to pursue studies in a specific field. However, the advent of online registration has drastically simplified this process, requiring merely a few minutes, enabling individuals from across the globe to participate in remote classes from the comfort of their homes. Olivier (2014) asserts that this mode of education is now not only more cost-effective but also accessible to a broader demographic, transcending barriers such as familial or health-related obligations. Technical participation necessitates only a computer/tablet and internet connectivity. Presently, online courses cater to a diverse audience interested in acquiring new knowledge and comprehending novel concepts. These courses cater to both novices and advanced learners, encompassing a spectrum of subjects from foundational physics to quantum chromodynamics, all readily accessible online.

In contrast to the previous norms, contemporary online education no longer mandates the use of a stationary desktop computer. Educational content can now be accessed via a tablet (Armstrong, 2020), smartphone (Mayadas, 1997), laptop (Stotz, 2018), or virtual reality (VR) headset, facilitating engagement with educational materials across diverse electronic platforms. This adaptability empowers students to acquire knowledge and foster understanding. Globally, innovative solutions are being integrated into this educational framework. Presently, students possess the flexibility to check and respond to emails at their convenience, utilizing a computer, smartphone, tablet, or other electronic devices. Instructional materials are now disseminated at reduced costs and with greater efficiency than ever before, rendering distance education more viable and accessible in numerous contexts.

Distance education is extensively employed today across nations such as the United States, Canada, Australia, Russia, India, various African countries, and throughout Europe and Eastern Europe, including the United Kingdom, Germany, Turkey, Sweden, and the Netherlands. Countries like Poland, Hungary, and Romania have engaged in its practice for over a century. The roots of distance education can be traced back approximately 150 years (Deniz, 2024).

Having been established many years ago, distance education is known to have undergone a notable evolution, particularly in the 1980s. This transformative period witnessed the emergence of numerous distance education providers, significantly expanding educational access, accommodating diverse learning needs and preferences, and fostering the adoption of modern pedagogical approaches. These advancements were driven not only by escalating educational demands that traditional methods could not satisfy, but also by advancements across various domains, notably communication technologies. For instance, progress in television and computer technologies facilitated the implementation of distance education methodologies distinct from conventional teaching practices. Scholarly research and practical applications in the field suggest that developments in distance education will continue to accelerate. The widespread proliferation of the internet and the increasing prominence of online educational activities and applications further substantiate this trajectory (Akpınar, 2003). In this context, the primary aim of the present study is to explore distance education through a comprehensive literature review. Considering the reasons lying behind this research study, the fundamental objective of the subjects discussed and covered in this research article is to seek for a clear answer to the following questions.

1. What are the fundamental theories leading to transformations considering the increasingly emerging new trends in technology for the distance education settings?
2. What can be done to better utilize these newly emerging technological trends together with the theories leading changes in distance education?

PURPOSE OF THE STUDY

The objective of this very current comprehensive research article is to delineate the evolution of distance education worldwide. Through a systematic literature review, the historical development of distance education across different years has been assessed and evaluated. The literature review entails searching, locating, scrutinizing, and synthesizing previously published works such as books, articles, theses, conference papers, historical records, and reports related to the research topic (Webster & Watson, 2002). The aim of the literature review, in essence, is to acquire essential information pertinent to the research subject. A great number of pivotal studies in the development of distance education over the years have been carried out. Examining the historical evolution of the subject matter is regarded as useful for predicting the future technological and instructional advancements and prospects in this field of education. In other words, in order to gather and evaluate data, and shed light on the changes coupled with the developmental process of new theories, which can increase the effectiveness of distance education, newly emerging technological trends with a focus on the transformative impact of distance education, this research article employs a review of the literature as a research method.

REVIEW OF LITERATURE

When scrutinizing the historical evolution and emergence of distance education, it becomes apparent that its origins can be traced back to the 1700s, with early practices cantered on written correspondence. A pivotal moment occurred on March 20, 1728, when the Boston Newspaper announced the commencement of "Steno Lessons" through distance education. By 1833, structured educational delivery via correspondence was formally established (Çoban, 2013).

Isaac Pitman is acknowledged for pioneering distance education through correspondence in England around 1840, where he provided Bible education to students via written communication. Pitman also introduced a system for evaluating students' work and assigning grades based on their achievements. The United States adopted England's correspondence-based distance education model and established the University of Correspondence Education in 1883, although its operation was brief (Nizam, 2004).

Germany emerged as a pioneer in distance education, establishing its foundations in 1856 with institutions such as "Tele Colleg," "Schulfernsehen," "Fern Universitat," and "Deutsch Institut Fur Fernstudien," which remain operational today. France made substantial investments in distance education, commencing studies in 1907 and formally establishing the Distance Education Centre in 1939. Likewise, Russia developed numerous projects and applications for distance education during this era, introducing them to the public (Antalyalı, 2004).

In France during the 1930s, several private institutions pioneered the introduction of correspondence distance education services, later receiving state support. In 1940, the National Tele Education Centre (CNTE) was renamed the National Distance Education Centre (CNED), persisting in its educational mission, particularly during wartime. The inception of distance education garnered significant interest from both students and the public, with notable enrolment figures: 1,413 individuals between 1944 and 1945, rising to 73,000 in 1963, and further to 158,000 by 1971, as documented by Edanich (cited in Papi & Büyükaslan, 2007). The introduction of audiovisual technologies in France from the 1970s accelerated the adoption of distance education, initially through satellite and subsequently through cable broadcasting. The 1980s marked a period of substantial advancements in information and communication technologies, profoundly influencing distance education. Educational services began to utilize mediums such as CD-ROMs, the internet, and computer technologies.

The swift development of mass media profoundly reshaped the framework of distance education practices. With the inception of radio broadcasting in the United States during the 1920s, universities established their own radio stations, expanding access to educational services on a mass scale. Educational radio programs debuted in 1923, with a network spanning over 500 radio stations exclusively dedicated to educational content. By the 1930s, radio dissemination had grown worldwide, gaining significant momentum in educational circles. These broadcasts reached nearly one million students, solidifying radio as a preferred medium for distance education. Despite initial challenges in achieving widespread adoption by 1945, primarily due to the costs associated with radio broadcasting technology and limited access to receivers, the post-war era witnessed a surge in educational programming tailored for children, thereby enhancing the efficacy of distance education via radio (Çoban, 2013).

Japan has also emerged as a proponent of distance education. In 1948, under the Education Law, Japan initiated distance education practices to accommodate soldiers and individuals unable to attend traditional schooling. This initiative aimed to ensure educational opportunities across secondary, high school, and higher education levels. Japan's approach to distance education closely mirrors that of the UK. In contrast, Canada has pursued a comprehensive distance education service inspired by the United States. With its extensive history in distance education, Canada serves as a global exemplar in this domain (Antalyalı, 2004).

Substantial strides have been made in the domain of distance education, spanning not only developed nations but also developing and underdeveloped regions. The University of the Cape of Good Hope, founded in 1873 in South Africa, pioneered a range of distance education initiatives. Similarly, under the stewardship of Hang Hermod, Sweden introduced a secondary school offering correspondence education. In 1910, Australia established its inaugural distance education institution to cater to higher education needs, thereby democratizing educational access nationwide. The global significance of distance education has garnered international backing from countries such as Italy, Canada, India, Poland, Israel, and Spain, catalysing diverse project developments and gradual implementations.

The swift emergence of mass media channels, consisting of radio and television, seems to have facilitated their integration into distance education effectively. Spain's establishment of the National Distance Education University in 1972 exemplified efforts to broaden educational opportunities across society. Concurrently, developed European nations laid the foundation for contemporary distance education systems, with England inaugurating the National College in 1974 and Germany establishing the Hagen Open Education University. In the 1980s, Thailand's STOU, a state-established university, pioneered various programs to cater to students unable to pursue university education due to diverse constraints. STOU conferred master's, bachelor's, and certificate degrees to participants in courses or training programs. The Netherlands established the Dutch Open University in 1984, adopting a similar structural model to STOU. By 1989, India had developed an extensive project focused on distance education, resulting in the launch of the National Open School, gaining nationwide attention. In a parallel effort, New Zealand initiated the Correspondence School in the early 1990s (Uşun, 2006).

Distance education has also been utilized for foreign language instruction. In the 1980s, England introduced the National British Program, utilizing radio and television broadcasts to teach French. Students accessed the program via these mediums, with a supplementary question-answer service available via telephone, facilitating limited interaction between students and instructors. Canada undertook a similar initiative in Manitabo and Ontario, employing telephone-based instruction for language learning among individuals unable to participate in formal education. Study materials such as journals and audio cassettes were provided, complemented by telephone consultations with instructors at specific intervals to practice verbal skills over the phone. In the 1990s, North Carolina State University (NCSU) in the United States launched the "Japanese Language Program with Television," utilizing cable broadcasting and Fiber optic technology to enrich the learning experience with visual elements. This program facilitated scheduled interactions between instructors and students, allowing feedback on course content. Significant advancements were also made in distance education at the University of South Africa, which introduced the "Teaching Mandarin Chinese through Distance Education Program." Students received comprehensive study guides comprising audio tapes, instructor correspondence, assignments, slide presentations, and teleconference services for additional support. Similarly, Israel's Open University enabled the study of secondary foreign languages through distance education initiatives (Adıyaman, 2002).

In Turkey, the origins of distance education trace back to 1927, driven by the physical limitations of traditional educational institutions. Over the years, this approach has been widely integrated across primary, secondary, high school, and higher education levels. A significant meeting convened on June 2, 1927, involving key figures in Turkish education such as the Minister of National Education, the Undersecretary, and Education Chiefs, among others. During this assembly, the deficiencies within the Turkish education system were deliberated, leading to a consensus on the potential of correspondence education as a viable solution (Arar, 1999).

Following the adoption of the Latin Alphabet in 1928, substantial efforts were directed towards enhancing literacy rates. In the 1950s, both the Ministry of National Education and private entities actively promoted vocational training and distance education in foreign languages, increasing investment in these initiatives. Consequently, distance education programs were launched at the Banking and Commercial Law Research Institute, affiliated with Ankara University's Faculty of Law. These initiatives facilitated professional development for bank officials and realized the idea of distance education proposed in 1927. Similarly, the establishment of the Instructional Films Centre (ÖFM) in 1951 marked an increased utilization of distance education methods (Papi & Büyükaslan, 2007).

In the late 1950s and early 1960s, the Ministry of National Education in Turkey began to acknowledge the educational contributions of correspondence education. Collaborating with the Undersecretariat for Vocational and Technical Education, initiatives were launched to deliver various technical subjects through correspondence channels. Subsequently, the Correspondence Centre was established within the Directorate of Statistics Publications. Despite offering a somewhat one-dimensional and limited educational experience, the Correspondence Centre underscored Turkey's commitment to distance education, significantly enhancing student education and expanding the scope of distance education initiatives in the country. The success of the Correspondence Education Centre laid the foundation for the establishment of the Experimental Higher Teacher Training School, Open Education Faculty, Open Education High School, Open Primary Education, and the Broadcasting Higher Education Institution (YAYKUR) (Arar, 1999).

In 1968, influenced by the widespread adoption of radio and television, the Correspondence Education Centre in Turkey underwent a transformation and was renamed the Radio and Television Education Centre. Subsequently, in 1982, with the evolution of advanced educational and training technologies, the Radio and Television Education Centre evolved further into the Informatics Center (Papi & Büyükaslan, 2007). The 1980s marked a significant period of expansion for distance education in Turkey. During this time, there was a substantial renewal of technological infrastructure capable of meeting the educational needs of the population.

It is claimed that the distance education as a higher education model was firstly implemented at Eskişehir Anadolu University's Open Education Faculty. In 1982, the faculty started working officially, organising some programs in Economics and Business Administration. The introduction of the distance educational model disseminated educational opportunities nationwide and made it possible for the Turkish citizens living in regions such as the Turkish Republic of Northern Cyprus and Western Europe to receive their diplomas (Çukadar & Çelik, 2003).

In the first place, a number of approximately 29 thousand students are known to have enrolled at the Open Education Faculty established by Anadolu University, and the number of the students enrolling at the faculty has increased over time exponentially.

Between 1982 and 1993, due to a great demand for open education, thousand educators completed their associate and bachelor's degree programs within an 11-year period and received their diplomas. As a result of such a revolutionary establishment offering a great educational chance to people, Turkey witnessed an exponential rise in its educated population. Anadolu University continued to establish collaborations with state institutions, leading to the introduction of associate degree programs in fields such as "Midwifery, Nursing, and Health Technician" and "Agriculture and Veterinary." Additionally, a comprehensive health project known as "Western Europe" was initiated under a protocol signed with the Ministry of Health in 1987, providing diverse health-related training to Turkish citizens residing abroad. Following the events of September 12, 1980, computer-based systems began to be integrated into the banking sector in Turkey, aligning with the technological standards observed in developed nations. Prime Minister Turgut Özal emphasized the critical role of technology in "keeping pace with the modern world" and hinted at the future trajectory of distance education in Turkey (Papi & Büyükaslan, 2007).

During the 1990s, the proliferation of the Internet and web technologies marked a pivotal moment in advancing the landscape of distance education, particularly through online platforms. In Turkey, the initiative to integrate web-based distance education was led by the establishment of the Informatics Institute at the Middle East Technical University (METU). The purpose of this initiative was to furnish students with opportunities for self-improvement in informatics, offering pathways to acquire certificates and diplomas. Faculty members from various universities across Turkey actively participated in these programs. While some of the programs at METU involved face-to-face interactions with instructors, the predominant mode of instruction remained distance education (Akgün & Duman, 2011).

The evolution of the Informatics Centre, which commenced in the 1980s, culminated in its transformation into the General Directorate of Educational Technologies of the Ministry of National Education (EĞİTEK), marking a significant milestone in the expansion of the educated populace. Consequently, during the 1998-99 academic year in Turkey, approximately 3 thousand individuals earned diplomas. By contrast, seven years later, this figure surged to 146 thousand, reflecting a substantial growth in distance education and a noteworthy increase in the literacy rate (Papi & Büyükaslan, 2007). Furthermore, in the academic year 1992-1993, the establishment of the Open Education High School granted official recognition to students pursuing high school education. Istanbul Bilgi University also pioneered web-based distance education programs, launching an internet-based MBA (master's) program. These initiatives garnered approval during the 8th meeting of the National Informatics Committee on September 18, 2000. Istanbul Bilgi University, a private foundation university, notably led the way as the first institution to formally introduce internet-based distance education in Turkey (Akgün & Duman, 2011).

In 1997, Sakarya University placed a strategic emphasis on web-based education, culminating in a decision to transition to Internet-Supported Education starting from the 2000-2001 academic year. Since 1999, a multitude of programs have been introduced under the umbrella of distance education, spearheaded by Sakarya University's Informatics Department. The Distance Education Project, initiated by Sakarya University in 2000, offered courses conducted by instructors from Lotus-Italy. Initially, 3 web-based courses were made available to 94 students, showcasing the university's pilot project's success. In 2002-2003, the Council of Higher Education (YÖK) made a significant decision to launch distance education associate degree programs in Turkey. Both Anadolu University and Sakarya University participated in this initiative, with Sakarya University introducing associate degree programs in Information Management and Computer Programming, alongside Anadolu University's Information Management Program. Initially accommodating 500 students each, these programs experienced subsequent increases in enrolment (Bayam & Aksoy, 2002).

In the year 2000, Sakarya University implemented internet-supported distance education programs in its undergraduate curriculum after years of preparation dating back to 1997, in collaboration with IBM Türk. The Department of Informatics had been exploring the feasibility of delivering courses through e-learning since 1999. Enhancing its expertise in distance education, the university facilitated academic endeavours and supported staff members in pursuing education at Iowa State University in the United States. These developments culminated in the decision to introduce e-learning services at the higher education level. Consequently, Sakarya University adopted IBM's Lotus Learning Space platform and launched the Sakarya University Distance Education Project in 2000. Starting with a pilot program in the Faculty of Engineering, nearly 200 students began accessing three core courses—Information Technology Applications, Logic Circuits, and Computer-Aided Design—via the internet. By the spring semester of 2001, this number had increased to 1,500, including visiting students (Bayam & Aksoy, 2002).

In the 2000s, The Turkish Online Journal of Distance Education (TOJDE), the first internationally published online education journal in Turkey, was established under the editorship of Prof. Dr. Uğur Demiray. Over time, it has become a prominent academic journal in the field. In 2015, editorial responsibilities were transferred to Prof. Dr. T. Volkan Yüzer. Additionally, in the same year, Istanbul Bilgi University launched web-based distance education programs and established a YÖK (Higher Education Council)-approved e-MBA (Master of Business Administration) program. These initiatives were decided upon during the 8th meeting of the Informatics National Committee on September 18, 2000. Istanbul Bilgi University, operating as a private foundation university, thereby became the first private university in Turkey to formally initiate an internet-based distance education system (Akgün, & Duman, 2011). Presently, distance education methodologies are extensively utilized by a multitude of universities, public institutions, and private sector entities around the world. Moreover, institutions of higher education administer certificate, associate, undergraduate, and graduate programs through distance learning, employing printed materials, radio-television broadcasts, computer-assisted learning, and interactive sessions. Students benefit from online practice assessments, archived course lectures, and digital textbooks.

METHOD

This study, with the purpose of investigating the influence of distance education based on its historical developments, carries out a literature review research methodology as it is of high significance to gather conclusive, scientific, practical and compelling evidence so as to broaden knowledge within the framework of distance education with the fundamental intention of developing the research findings overall. Due to the nature of this research, the literature review as a research method is conducted to systematically collect, critically analyse, and synthesize data from the existing body of the related studies in the literature. Furthermore, it furnishes a clear and obvious evaluation, overview, and summary of the current research trends in the domain of distance education with the goal of helping the future researchers to structure credible theoretical schema and supports claims stemming from the existing scholarly work, whilst also ascertaining the rising and advancing research studies to enlighten the future studies and prospects of the domain of distance education adequately. In other words, so as to gather the essential data for this research study and to find concrete answers to the research questions aligned with its objectives, a document analysis approach was employed. As articulated by Webster and Watson (2002), document analysis entails the systematic examination of existing written materials and scholarly works. In this study, the researchers collect relevant documents, articles, and published materials to identify the newly emerging trends in technology along with the fundamental theories leading to transformation how distance education is perceived and utilised. Following this data collection, the researchers analyse the information obtained through the document analysis in relation to the research questions and offer a series of recommendations for educational institutions and educators to address the changes, new theories associated with distance education. It is also crucial to note that the researchers did not involve any human participants during the data collection and analysis phases.

PSYCHOLOGICAL FOUNDATIONS IN DISTANCE EDUCATION

Due to the swift emergence of communication and information technologies (ICT), distance education has turned out to be increasingly accessible, flexible, and crucial in education. Henceforth, it is claimed that a solid and psychologically credible and a theoretical basis are altogether fundamental components of establishing a productive, fruitful and efficient distance education platform. Theories provide a schema for understanding the concepts and boost their efficiency, advancement, and performance (Deniz, 2024). Keegan (1986) argues that theories serve a practical function. Holmberg (1985) highlights the significance of theoretical schemas with a belief that they provide insights into what could be done in distance education platforms for better learning outcomes under varying circumstances. This understanding helps us implement a set of effective methodologies. To put it into a plain example, it could be stated that in an online course in which learners' interactions are confined to lecture videos, there seems to be a little bit of consideration for distance education, asserting that providing varying opportunities to students for a better interaction reduces the perception distance in distance education learning settings.

As globally acknowledged, the primary objective of distance education is to make learning much easier and more accessible by enhancing learners' ability to perform well. Understanding the various views to how learners learn is essential for instructional designers when selecting and developing suitable instructional strategies, materials, and technological tools. There exist multiple learning theories, none of which can comprehensively explain learning in isolation or support it effectively on its own. Therefore, instructional designers often integrate these theories to inform their design processes. In this section of the review article, behaviourism, cognitivism, constructivism, and connectivism will be examined, exploring how these theories have been adapted for application in distance education. The discussion will emphasize the necessity of integrating diverse theoretical perspectives to effectively guide instructional design in this context.

Behaviourism

Behaviourism views learning as the observable alteration of behaviour in response to external stimuli present in the environment (Skinner, 1974). It centres on the stimulus-response relationship and how these associations are strengthened or weakened through reinforcement. Behaviourists meticulously analyse the learner's environment to determine the most effective timing for instruction and to identify suitable reinforcers that motivate learning. Therefore, regular practice and review sessions are employed to sustain the learner's readiness to perform (Schunk, 1991).

Criticism surrounding behaviourism in explaining learning highlights its limitations in accounting for incidental and exploratory learning processes, which are not adequately addressed by this theory. However, behaviourism offers practical implications for distance education. Instructors are advised to clearly articulate expected learning outcomes to learners, enabling them to align their focus with instructional expectations and self-assess their progress. Distance education programs should incorporate observable assessments to effectively evaluate learner outcomes, with feedback from these assessments guiding instructors and learners towards necessary adjustments. Sequencing of learning materials plays a crucial role in enhancing learning outcomes; instructors can structure materials progressively from simpler to more complex, from familiar to unfamiliar topics, and from theoretical knowledge to practical application. Needs assessments are essential in identifying gaps between current and desired learning performances, often integrating observable behavioural indicators into instructional strategies. Lastly, the inclusion of practice activities is paramount in course design for distance education, ensuring learners engage actively with the content to reinforce their understanding and skills development (Anderson, 2008).

Cognitivism

The emergence of cognitivism could be traced back to the late 1950s as a separate domain branch from behaviourism, and it focuses on how individuals process information rather than just visible and obvious behaviour, dwelling upon the intricate cognitive processes such as thinking, language, memory, motivation, and metacognition. Different from the domain of behaviourism, cognitivism lays a great deal of emphasis on someone's mental ability to process and utilize learning. Memory is claimed to play a fundamental role in cognition with the aim of assisting people as the repository in which people keep, store and recall information systematically. In the first place, the perception of information through the senses takes place in sensory memory followed by moving to working memory in which the process of information occurs with a combination of the existing knowledge utilizing the long-term memory. As the capability of working memory is confined and needs to be assisted, presenting information in a meaning order and manner through instructional framework is needed as chunks. To exemplify it for the domain of distance education, in distance education, processing information takes place with the help of educational videos as they provide sensory information help students process information and combine them with the existing knowledge in their memory structure. Chunking also assists learners by grouping the subject matters into logical, rational and meaning units. Cognitivism, furthermore, presents the idea of schemas in which mental structures are organised properly and they develop to store new information, and they impact how people experience and interpret their learning progresses. As a result, cognitivism concentrates on the internal mental processes and comprehending learning occurrences (Miller, 1956).

The practical involvement of cognitivism in distance education practice accentuates the importance of various actions stemming from the idea of promoting learning outcomes. These actions are known to present leaners proper, meaningful, and comprehensible based on learners' cognitive abilities to utilise information processing and put them into working memory. Making meaningful connections between new information with learners' previous background knowledge helps them recall information from long-term memory and develop a clear understanding of the subject matter. To have a better comprehension, chunking is utilised as it hinders cognitive overload and any excessiveness, helping learners process information in their working memory effectively and adequately. The diversity of instructional strategies adapts to different learning styles through the utilization of various sensory channels (audio and visual) to enhance information processing. For a productive and efficient learning experience, the engagement of learners' attention, building a sense of confidence, creating a source of motivation and inspiration are some of the essential components of establishing a distance education platform. What is more, associating knowledge to real-life situations through applications enhances comprehension. These approaches altogether substantiate the implementation of cognitive theory in establishing a productive, efficient and performance-boosting distance education platform where learners perform and practice easily (Anderson, 2008).

Constructivism

With the implementation of constructivism, students structure and build their knowledge with a full active participation rather than what happens in the traditional learning where students learn passively and act as passive receiver of knowledge. In constructivism, instruction assists leaners as a conductor rather than a teacher forcing students to gain knowledge. Students get involved in real life settings and make interpretations derived from the existing knowledge stored and experiences gained, resulting in varying interpretations among their peers who go through the same content. Withing the schema of distance education, one of the most fundamental and essential aspects is to prepare a varying set of materials that recognise and incorporate learners' backgrounds, cultural values, and pervious learning experiences into distance education platform efficiently. Constructivists substantiate the materials stemming from the idea of putting them into practical life settings for learners to promote their learning inputs and outcomes. Constructivism in distance education helps students be more active in constructing knowledge by themselves, hindering them from being passive receptors of the information being presented. With regard to constructivism, teachers/educators act as a conductor/facilitator rather than being in a position of forcing students to learn and gain knowledge through passive construction of knowledge. Learners are always active here and they construct knowledge by utilizing their prior knowledge to gain more learning experiences and they keep interacting and communicating with their peers and educators to develop a much better comprehension based on their personal and individual needs. Collaborative learning activities are another pivotal component of constructivism as it assists leaner with a set of varying chances to get involved in real-life settings, group work with the intention of developing their metacognitive skills. Leaners build knowledge stemming from their real-life issues, cultivating confidence, promoting interaction in learning settings that also promote and enhance their exponential thinking, help them socialize and assist them with a sense of subjective understanding and comprehension (Anderson, 2008).

THEORETICAL FRAMEWORKS IN DISTANCE EDUCATION

The theories discussed here illuminate educators, policy makers and educational institutions to get the hang of a framework for understanding the three basic and fundamental components of distance education such as systems, communication and media theories together with connectivism, which will be first explored below. Connectivism, in its essence, is regarded as a technological framework and a learning theory which lays a great emphasis on the core role of social and computed-based networks in learning settings to learn and spread knowledge. Systems theory explains how distance education functions as a system through a set of interconnected technological components. Communication theory is claimed to present insights into the mechanisms of

communication technologies, applicable to expounding communication within distance education settings. Media theory enhances the understanding of how varying media systems and theories could competently substantiate communication in distance education through the diversity of modalities.

Connectivism

The concept of connectivism comes into existence as a response to the revolutionary effects of technology on our lives and learning experiences. In contrast to the concepts of behaviourism, cognitivism, and constructivism, connectivism asserts that learning takes place due to the fact that learners interact and response to complex and non-stop-changing online settings. It also flourishes with the concept of the diversity of available sources paving the way for learners to make meaningful and consequential connections, leading them to have the ability to comprehend the relevant information and the importance of information. Connectivism feeds on the complex network of chaos, intricate theories, presenting leaners a new schema to define how learning takes place in today's ever-changing digital and online world (Siemens, 2005).

The concept of connectivism, as explicated by Siemens (2005) and detailed by Anderson (2008), is claimed to reshape distance education with its distinguishing and innovative r implications. Instructors/teachers/educators from all educational institutions are compelled and encouraged to foster participation, involvement, and commitment among learners, encouraging them to delve into and fuse the current information across diverse sources. By doing so, connectivism as an approach goes beyond the traditional learning boundaries, encouraging and promoting a dynamic learning setting. What is more, educators are believed to play a pivotal role in assisting learners with the necessary and essential skills to critically investigate and comprehend the reliability and importance of information, thereby fostering essential competencies in critical thinking along with information literacy. A great emphasis is put on the idea that peers and instructors work collaboratively through a set of varying communication technologies, urging an inclusive learning community through active participating and involvement. Learners are motivated to alter suitable communication technologies in line with their learning needs and ambitions, as also adapting to the swift improvements and developments in educational technology. These principles highlight Connectivism's revolutionary effects on instructional strategies in educational setting, paving the way for a learner-cantered approach that blends dynamic information networks and encourages continuous learning in today's developing and increasing digital landscapes in the domain of distance education.

Systems Theory

Systems theory and its implementation have long been essential for varying fields, including the domain of distance education. This theoretical schema is vital to comprehending how distance education is both formulated, developed and how it is executed. In accordance with systems theory, to maximize, enhance and promote outcomes within any organisational structures, a systematic method is needed as it plays an essential role due to the fact that it requires systematic analysis, problem-solving, and the development of systems to develop the efficiency and accomplish desired goals (Ryan, 1975). A group of varying determinants impact the vibrant implementation of distance education, which change from global attempt to local groups even learning communities. As expounded by Moore and Anderson (2003) all intricate systems are associated with larger entireties, contemplating the complex balance of the natural order and chaotic events in the whole world itself. The concept of distance education primarily and fundamentally counts on the integration and fusion of technology and instructional methods and theoretical frameworks designed for remote learning along with an interactive platform which requires an effective communication between educators and learners, going beyond traditional way of teaching and learning and student-to-student involvement and active participation in traditional classrooms. The key components comprise the varying digital media tools, comprehensive instructional production, technological infrastructure available in different countries/regions, organisational schemas of educational institutions providing distance education, learner distinguishing personality traits affecting individual learning inputs and outputs, the establishment of collaborative learning groups to enhance the implementation and multimedia tools of distance education across all levels.

Communication Theory

Communication theory comprises varying perspectives that have developed and enhanced over time to get the hang of the intricates of communication processes. Littlejohn (1989) ascertains and identifies a set of four key and essential perspectives such as transmissional, behavioural, interactional, and transactional, which provide a completely different and distinguishing angle to interpret and study communication process, by laying a great emphasis on varying points like the flow of information, behavioural responses, interactive dynamics, and mutual influence between communicators. Ultimately, all of these provide a comprehensive schema for analysing how communication operates across different environments, encompassing its applications and implementation in the domain of distance education and beyond. The concept of communication theory covers four distinctive and distinguishing aspects that offer varying angles on the very nature of how communication takes place. The first key perspective concentrates on the clear transfer of message or information from one source to another. In contrary to the first key, the transmission, the behavioural aspect brings attention to how information receivers make interpretations and respond to messages, accentuating feedback and clarity. The interactive key component regards communication as a social process with the involvement of participants to interact with one another, urging a mutual understanding in a collaborative manner. Finally, the transaction emphasis transcends interpretation, laying a strong emphasis on the active participation to share and re-produce of

the meaning among participants. These four points are claimed to empower our understanding of communication dynamics, providing us with insights into how we transmit, receive and interpret information and messages in varying settings (Richey et al., 2011).

Media Theory

Media theory plays a paramount and fundamental role in making learning experiences effective through a set of instructional media tools which consist of varying structures like sound, visuals, objects and physical movements (Richey et al., 2011). Nevertheless, the concentration goes beyond the mere existence of media and how leaners utilise these media sources and how they can learn from them properly. In the domain of distance education, the employment of the visual media like PowerPoint slides, videos along with animations is claimed to have an immense role in shaping instructional purposes and meeting learners' educational needs; however, it is advisable to bear it in one's mind that their efficiency is changeable. When establishing a distance education setting, it is of high importance for educators to select appropriate media tools and digest the effect of visuals on promoting learning inputs and outcomes meticulously. To comprehend the importance of the roles of visuals and their impacts on promoting learning processes and strategies for a better selection of effective media tools for distance education platform, Dick, Carey, and Carey (2009) posit that visual tools, including a range of simple drawings, diagrams along with complex videos and animations, are claimed to have a pivotal role in media since they appear to have developed dramatically with the help of technology. What is more, visuals have a crucial function in improving individuals' learning progress by articulating and expressing information effectively. It is also advisable for educators to ponder on a set of contextual determinants like the number and the size of the learner group, access to adequate resource, and the interactions needed once they sit down to produce and select a set of media tools for instructional purposes. Furthermore, educators and institutions must consider the cost effectiveness of media tools, storage capacities and technical support aids and possible disturbances to the learning settings along with a careful consideration to make it sure that media tools are in a complete harmony with educational purposes and to boost individuals' learning experiences for all participants so as to avoid any sort of managements issues, which may pop up suddenly.

TECHNOLOGICAL ADVANCEMENTS AND EMERGING TECHNOLOGIES IN TRANSFORMING DISTANCE EDUCATION

It is an undeniable fact that because of globalization, technological developments have gained a swift and unprecedented momentum to reshape different aspects of human life, bringing never-before-seen chances along with challenges and obstacles to developing and expanding markets. Accentuating the significance of technology literacy, preparing and designing an educational platform which includes ever-developing technological and instructional tools and integrates them into education to boost learning inputs and outcomes is of paramount importance as innovations like virtual and augmented reality, artificial intelligence together with the Internet of things are believed to have a function to transform teaching and learning contexts, boosting their reliability, validity and effectiveness. In this regard, as known, on a global scale, higher education institutions have the tendency to design their teaching and learning settings by adopting these technological advancements in order to meet both students' needs and to improve learning inputs and outcomes together. Furthermore, it is an unavoidable fact that today's students are rather familiar with the aforementioned technological developments as they believe that these technologies make their learning easier and provide them with adaptable learning experiences, moving and breaking away from traditional methods and techniques. Under such sort of an ever-evolving-developing technological world, in order to utilize the complete potential of ever-increasing-emerging technologies in education, it is highly advisable for educational institutions to allocate resources to fund, evaluate and substantiate innovative pedagogical and educational approaches.

Virtual Reality

Sun, R., Y.J., and Cai, Q. (2019) suggests that virtual reality (VR) is an avant-garde technological advancement letting users in simulated environments through computer-generated experiences. It is capable of producing real life settings along with imaginative contexts where users feel like they are in the real world that go beyond traditional physical reality. Since the origin of virtual reality, which dates back to the 1960s, virtual reality has developed at an unprecedented speed and it has improved traditional way of teaching along with traditional teaching and learning methods with an active engagement of students via real life sensorial experiences, offering them a great visualization by demonstrating processes and teaching and learning activities altogether. It is of high significance to comprehend the importance of virtual reality in educational settings as it enables both educators and students through its content and material to utilize the discovery and comprehension of both abstract and complicated conceptions within an environment where students feel safe. It also allows students to have access to computer-generated simulations, offering interactions among students through 3D settings to improve the root of learning experiences.

Augmented Reality

Tzima, Styliaras, and Bassounas (2019) argue that the emergence of augmented reality (AR) as a pivotal technological trend with an expectation to gain popularity along with the escalating availability of augmented-reality-based technological devices worldwide has been a very hotly discussion topic due to its benefits that it offers as it is believed to combine online and digital imaginary situations into real-life settings, leading its users to broaden and develop their perspective. Different from virtual reality (VR) believed to get its users involved in virtual worlds depending on the powerful computer and computer technologies,

augmented reality brings freedom and makes its users move in real life and natural settings with the capability to reveal 3D visuals, improving traditional learning through interactive applications. It also focuses on empowering comprehension by utilizing 3D visualizations of intricate objects in a realistic manner. Therefore, educational research lays a great emphasis on AR's possible potential to promote learning processes and outcomes through motivation and overall performance and potency. Speaking of the implementation of AR in distance education, it could be said that the AR-based technologies such as Internet of Things, smart watches, Google's Glass project, Microsoft's HoloLens, Facebook's Oculus Rift, bracelets, rings, necklaces, smart clothing, and tattoos are a part of wearable technologies in distance education or educations itself at all levels of education and they provide its users with a setting in which they can interact instantly between the real and virtual worlds.

Artificial Intelligence

Holmes, W., Bialik, M., and Fadel, C. (2020) assert that the capacity of computers has been enhanced unequally, offering independent learning opportunities ever before thanks to the manipulation of applications since 1950 and they argue that such kind of an unprecedented development indicates a turning point not only in computer sciences, but also in business, education, and society, meaning that computers have turned out to be so powerful that they could complete and finish new jobs without human beings, by paving the way for the existence of Artificial Intelligence. In this sense, Artificial Intelligence (AI) has the function to communicate with applications by using their mother tongue, emotions, gestures, facial expressions not only to adapt to them but also so as to learn from them to boost itself to be more productive independently. Artificial Intelligence is claimed to have a pivotal impact on different aspects of our daily lives and it has become a great force for innovations for every industry, including education because it is argued that its effect is felt everyone and it radically chances the traditional teaching and learning methods and approaches thanks to emerging technologies mentioned above by changing the way how individuals teach and learn in educational institutions. What make Artificial Intelligence so appealing in education is due to its different aspects it offers for individuals such as personalized learning, dynamic assessments, and its function to substantiate real life and meaningful interactions among individuals in online, on mobile devices, or hybrid/blended learning and teaching platforms. Many studies conclude that Artificial Intelligence, along with its robotic technological applications and devices, plays a significant role in education along with its function to address absenteeism, take on a role in leading productive conversations throughout language instruction, and even it provides learners with sentimental and emotional support by promoting creativity and furnishing them with an ability to solve problems independently.

CONCLUSION AND DISCUSSION

The current study underscores the profound and trasformative impact of advancements in information and computer technologies encompassing radio, television, the Internet, and revolutionary computer systems on distance education on a global scale. These technologies not only enrich teaching methods but also significantly enhance learning outcomes. The evolution of Internet connectivity, particularly through fiber optic and DSL technologies, has facilitated a global educational landscape, fostering interactivity between students and educators. This dynamic interaction allows for the maximization of educational engagement, reinforcing the idea that distance education has transformed from traditional correspondence methods to sophisticated online platforms that support both synchronous and asynchronous learning. Such platforms greatly increase accessibility, overcoming barriers of physical distance and economic constraints.

As highlighted in the study by focusing on finding an answer to the research questions, it is obvious that nations worldwide, including Turkey, are increasingly embracing distance education to address the challenges posed by high student populations and limitations in formal education systems. This shift signifies a commitment to lifelong learning, democratizing access to information and a wealth of online resources. The findings suggest that distance education not only enhances learning opportunities but also promotes an egalitarian approach to knowledge acquisition. The integration of psychological theories, specifically behaviourism, cognitivism, and constructivism within the framework of distance education is critical to enhancing learning experiences. Behaviourism emphasizes the importance of observable inputs and outcomes, suggesting a structured approach to evaluation (Anderson, 2008). Cognitivism shifts focus to the mental processes involved in learning, advocating for the effective processing and utilization of information (Miller, 1956). Constructivism, on the other hand, revolutionizes education by promoting active, individualized learning experiences through real-world engagement and collaboration (Anderson, 2008).

A great number of the recent studies have highlighted the transformative role of technology in distance education. For instance, research by Tschida et al. (2022) emphasizes how AI tools can provide personalized feedback, thus enhancing student engagement and learning outcomes. Similarly, a study by Huang et al. (2023) investigates the integration of VR and AR technologies in online learning environments, demonstrating their effectiveness in creating immersive experiences that facilitate deeper understanding and retention of knowledge. Moreover, the incorporation

of communication systems and media theory, along with connectivism, offers valuable insights for educators, policymakers, and educational institutions. These frameworks highlight the communicative and instructional potential of media-based technological tools employed in distance education. In conclusion, the confluence of technological advancements and educational theories enriches the distance education framework and promotes accessibility and engagement. The implications of these findings extend beyond individual learning experiences, potentially transforming educational systems globally and paving the way for a more inclusive and equitable learning environment.

The following suggestion can be made within the framework of the research:

The article titled "The Evolution of Theories, Transformations, and Emerging Trends in Distance Education Worldwide: A Comprehensive Research Article" presents a positive outlook on the advancements in computer technologies through a thorough literature review. However, it is advisable for future researchers exploring the concept of distance education to delve into the theoretical foundations such as systems theory, communication theory, and media theory while also addressing the associated obstacles and challenges. Moreover, a critical examination of the implications of emerging technologies like artificial intelligence, virtual reality, and augmented reality is essential. This investigation should consider the potential drawbacks for students, educators, and educational institutions, ensuring a balanced perspective that acknowledges both the benefits, and the risks involved. In addition, researchers could explore interdisciplinary approaches that integrate insights from psychology, sociology, and educational technology to better understand the complexities of distance education. Investigating the impact of socio-economic factors on access to and engagement with distance learning could also provide valuable insights. Furthermore, longitudinal studies assessing the long-term effects of these technologies on learning outcomes and educational equity would be beneficial. By embracing a more nuanced and holistic approach, future research can contribute to the development of effective and inclusive distance education practices.

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Statements of publication ethics

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

Authors Contribution Statements

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Ethics Committee Approval Information

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

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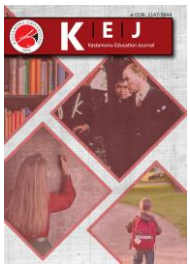

| Research Article / Araştırma Makalesi |

An Examination of Views of Teachers, Students, and Parents on Inclusive Practices in Social Studies Lessons During Distance Education

Uzaktan Eğitim Sürecinde Sosyal Bilgiler Dersi Kaynaştırma Uygulamalarına İlişkin Öğretmen, Öğrenci ve Veli Görüşlerinin İncelenmesi[1]

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Keywords
1.Inclusive education
2.Social studies education
3.Distance education
4.Individuals with special needs

Anahtar Kelimeler
1.Kaynaştırma eğitimi
2.Sosyal bilgiler eğitimi
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Abstract

Purpose: The aim of this study is to examine the views of classroom teachers, fourth-grade inclusion students, and parents regarding inclusive practices implemented in social studies lessons during distance education.

Design/Methodology/Approach: The research design is case study. The data were obtained from a study group consisting of 15 classroom teachers, 15 inclusion students, and 15 parents during the 2020-2021 academic year. The data collected through semi-structured interview forms were analyzed using content analysis.

Findings: As a result of the research, it was seen that most of the classroom teachers did not implement separate practices for inclusion students, using methods such as direct instruction, question-answer, and discussion in social studies lessons. Inclusion students stated that distance education was mostly negative, lacked social interaction, was boring, did not provide an interactive environment, and incomplete learning was experienced. According to the parents' opinions, it was concluded that students did not participate in social studies lessons, had learning gaps, the course was not presented appropriately for the student, teacher did not provide additional support for their children, and distance education caused attention deficits in their children.

Highlights: From all stakeholder perspectives, it was concluded that distance education mostly had negative effects on inclusion students. Additionally, both teachers and parents frequently expressed that the implemented practices during the pandemic were designed according to typically developing students, resulting in inclusion students being neglected.

Öz

Çalışmanın amacı: Bu araştırmada uzaktan eğitim sürecinde sosyal bilgiler dersinde uygulanan kaynaştırma uygulamalarına ilişkin sınıf öğretmenlerinin, ilkokul dördüncü sınıf kaynaştırma öğrencilerinin ve kaynaştırma öğrencisi velilerinin görüşlerinin incelenmesi amaçlanmıştır.

Materyal ve Yöntem: Araştırmanın modeli durum çalışmasıdır. 2020-2021 eğitim öğretim yılında Tekirdağ ili Çorlu ilçesinde bulunan MEB'e bağlı okullarda veriler toplanmıştır. Bu okullardan seçilen 15 sınıf öğretmeni, 15 kaynaştırma öğrencisi ve 15 veli ile çalışma grubu oluşturulmuştur. Yarı yapılandırılmış görüşme formları aracılığıyla veriler toplanarak içerik analizi yapılmıştır.

Bulgular: Araştırma sonucunda sınıf öğretmenlerinin çoğunlukla; kaynaştırma öğrencilerine ayrı bir uygulama yapmadığı, sosyal bilgiler dersinde düz anlatım, soru-cevap, tartışma gibi yöntemleri kullandığı, internet ve sistem kaynaklı sorunlar yaşadığı görülmüştür. Kaynaştırma öğrencileri tarafından; uzaktan eğitimin çoğunlukla olumsuz geçtiği, sosyal etkileşimin olmadığı, sıkıcı olduğu, interaktif ortam sunulmadığı, sosyal bilgiler dersinden kopulduğu ve verimliliğin düştüğü belirtilmiştir. Veli görüşlerine göre; öğrencilerin sosyal bilgiler dersine katılmak istemediği, öğrencilerde eksik öğrenmeler oluştuğu, dersin öğrenciye uygun olarak sunulmadığını, EBA TV yayınlarının izlenmediği, öğretmenin öğrencisine yönelik ayrıca bir çalışma yapmadığı, çevrimiçi öğrenmenin öğrencide dikkat eksikliği yarattığı sonucuna ulaşılmıştır.

Önemli Vurgular: Tüm paydaş görüşlerden hareketle uzaktan eğitim sürecinin kaynaştırma öğrencileri açısından çoğunlukla olumsuz geçtiği belirlenmiştir. Ayrıca öğretmen ve veliler tarafından, pandemi sürecinde yapılan uygulamaların normal gelişim gösteren öğrenci düzeyine göre yapıldığı ve kaynaştırma öğrencilerinin arka planda kaldığı sıklıkla ifade edilmiştir.

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INTRODUCTION

Children are beings who have differences in terms of their character traits and developmental processes. The uniqueness of each child requires services to be provided to them and educational goals to be shaped according to their characteristics. Primary school is an educational environment where many children with different individual characteristics are integrated into the same class. Within the framework of mainstreaming education, children with special needs can also receive education in general education classrooms with their peers by adopting the principle of the least restrictive environment. Inclusive education targets the development of non-academic skills as well as the improvement in the academic achievement of students. One of the most important benefits of inclusive education for students with special needs is to be able to take part in peer environments where their social skills such as communicating, helping, following instructions, and expressing their ideas and feelings will be developed and supported (Özdemir, 2020). In this sense, the social studies lesson is important in developing the academic and social skills of inclusive students. Social studies is a lesson that conveys knowledge and culture from the past to the present and addresses human relations and human interaction with the environment. The social studies lesson, with its wide scope, prepares the appropriate environment for students to identify themselves and their environment, adapt to their environment, and develop their thinking skills. Although students with normal development can obtain these behaviors in life, students with special needs may lag behind in this respect due to their disabilities (Güzel Özmen & Aykut, 2020; Özyürek, 2009). In addition to transferring knowledge and values, the social studies lesson also provides students with many skills that will make them well-equipped citizens. Thus, it can be stated that this lesson is a pioneer in the integration of individuals with special needs into society by providing the opportunity for them to acquire these skills. Teacher and peer factors have an important place in the fulfillment of the objectives of the social studies lesson and the successful sustainability of inclusive education. However, it is thought that the removal of the teacher and peer factors will have a negative impact on the development of social and academic skills of the inclusion students. In 2020, as the Covid-19 virus affected the whole world, and became a pandemic, the teacher and peer factors were carried to the online platform with distance education, which entered the education and training life of many in a mandatory way. It is believed that this situation negatively affects the academic success and social life of students with special needs. It is also believed that this condition leads to deficiencies in the learning outcomes of social studies lessons. For inclusive students, this deficiency may be more extensive due to distance education. This depends on the practices and arrangements that teachers make specifically for inclusive students in the social studies lesson during the distance education period. During distance education, individualized activities for inclusive students have become more important in order not to cut them off from education and to ensure that they improve their skills. Not only the inclusive practices carried out by teachers but also the practices carried out by the Ministry of National Education (MoNE) are very important.

There are many studies on inclusive education in the literature. A review of the studies examining the social studies lessons in inclusive education reveals that inclusion students' achievement in the social studies lessons is not at the sufficient level (Görmez, 2016); teachers try to act in accordance with the principles of inclusion in the social studies lesson, but they do not have sufficient knowledge (Kot et al., 2015). In addition, it was also observed that the social studies lesson has an important place in integrating students with special needs into society (Sarılarhamamı & Demirkaya, 2021), and inclusion students find the social studies lesson necessary and consider that it socializes them and teaches them manners and rules of behavior (Büyükalan & Yaylacı, 2018). While this situation shows the importance of the social studies lesson in inclusive education, it also shows that inclusive education may not always be fully realized due to insufficient knowledge, skills, and practices. On the other hand, in a study examining teachers' views on students with special needs in distance education, it was stated that it is difficult to meet the needs of inclusive students in distance education and that these students, during distance education, cannot maintain many skills gained in face-to-face education (Mengi & Alpdoğan, 2020). The findings of a different study also lend support to the result that students are unable to maintain the skills acquired in face-to-face education in distance education (Aslan et al., 2023). In addition, it was observed that inclusive students could not adapt to the distance education process, experienced distraction and loss of motivation (Yüksel Başar & Gündüz, 2022); they were negatively affected by the process and their literacy skills decreased (Çavdarlı & Karadağ Yılmaz, 2022). In the education of individuals with special needs, each skill is acquired by the student as a result of long efforts. It is as important to maintain and use skills in daily life as it is to acquire them. Besides, forgetting skills that have already been acquired may create negative consequences in the future in the education of students with special needs. Despite the importance of the social studies lesson in inclusive education, to the knowledge of the author, there is no study addressing this lesson for students with special needs in the distance education process. It was also pointed out that there are few studies investigating students with special needs during distance education. For this purpose, this study aims to examine the opinions of fourth-grade inclusive students, classroom teachers of the inclusive students, and parents of the inclusive students regarding the inclusion practices implemented in the social studies lesson during distance education. With this purpose, answers to the following questions were sought:

1. What are the views of the classroom teachers on the inclusion practices implemented in the social studies lesson in the distance education process?
2. What are the views of the inclusive students on the inclusion practices implemented in the social studies lesson in the distance education process?
3. What are the views of the parents of inclusion students regarding the inclusion practices implemented in the social studies lesson in the distance education process?

METHOD/MATERIALS

Research Model

In this study, the case study model, which is one of the qualitative research designs, was used to examine the views of classroom teachers, inclusive students, and parents on the inclusion practices carried out in the social studies lesson during distance education. A case study is a research model that holistically examines one or more phenomena by dealing with the individual or society with which it is related (Yin, 2009). The points that distinguish a case study from other qualitative research methods are that it deals with a current event, examines the subject in the context in which the phenomenon occurs, and uses various data sources (Öztuna Kaplan, 2013). In this study, Yin's (2009) nested single-case design was used. In case studies, there may sometimes be more than one subunit within a single case. In this study, since more than one data analysis is required due to the multiplicity of data, a single nested case design was used (Yıldırım & Şimşek, 2021). To ensure multiplicity, the opinions of teachers, students, and parents were collected, and the opinions were analyzed in subunits using a single nested case design.

Study Group

The study group of the research was formed according to the criterion sampling strategy, one of the purposeful sampling methods. Criterion sampling refers to the selection of participants according to the criteria determined under the objective of the research (Yıldırım & Şimşek, 2021). In this study, the participants were selected according to the criterion of having participated in inclusion practices in social studies lessons during distance education.

The study group comprised 15 classroom teachers teaching fourth-grade inclusion students through distance education, 15 inclusion students, and 15 parents of those students. Participants were chosen from public schools affiliated with the MoNE in Çorlu, Tekirdağ. To ensure the representation of the population, schools were selected from regions with varying socioeconomic levels using the convenience sampling method. Socioeconomic statuses were established through interviews with school management, ensuring diversity in the data. The participants voluntarily participated in the study. The shorthand *T* stands for classroom teachers, *IS* for inclusion students, and *P* for parents.

The majority of classroom teachers, of which 11 are females and four are males, mostly had 12-19 years of teaching experience. Most of the teachers had a bachelor's degree in classroom teaching and had taken courses in inclusive education. The class sizes ranged between 29-35 students, with most classes having only one inclusion student.

Of the 15 students, 10 were female and 5 were male. Seven students had learning disabilities, three experienced attention deficit hyperactivity disorder, two had mild intellectual disability, two were gifted, and one had speech and language difficulties. Furthermore, the majority of students had access to a computer and the Internet at their homes, and most had between 0-2 siblings.

Of the parents who participated in the study, 14 were female and one was male. Most parents were between the ages of 35-41 and had attained varying levels of education, from primary school to university. Additionally, the majority of the parents reported having a middle-level income and having two children.

Data Collection Tools

Although case studies do not have a specific data collection method, interviews, observations, and questionnaires are commonly utilized (Öztuna Kaplan, 2013). For the present research, the interview method was employed to investigate participants' experiences. A semi-structured interview, which provides a flexible structure while maintaining a specific framework, was chosen for this study.

Semi-structured interview forms were developed for the teacher, student, and parent groups in the study. Two experts in classroom teaching, who were academicians, were consulted during the form creation process. The forms were revised according to the feedback provided. The interview forms comprise two distinct sections. The initial section of the form comprises questions pertaining to the descriptive characteristics of the participants. In the second part of the form, questions were posed in relation to the research questions, encompassing topics such as distance education, social studies lesson inclusion practices in distance education, challenges encountered during the process, and the resources provided.

Data Collection and Analysis

The data were gathered in June 2021 at four public schools in Çorlu, Tekirdağ. The interviewer conducted one-on-one semi-structured interviews with each participant on their school premises during their available time periods in an empty classroom or guidance room. The interviews were recorded with the participants' permission and transcribed to ensure accurate data processing.

Content analysis was used to analyze the data in depth. To analyze the data, MAXQDA 2022, a qualitative data analysis program, was utilized. The study used an inductive approach to derive codes and categories from direct data. Related categories were grouped thematically and presented in tables. While presenting the data in the tables, the frequencies of the codes were given. Teachers expressed their opinions separately for each inclusion student in their class. Therefore, even though 15 teachers were interviewed, the total frequency counts could exceed 15.

To ensure the validity and generalizability of the research results to similar settings, the processes of determining the study group and of collecting and analyzing the data were explained in detail. Furthermore, the characteristics of the study group were presented in detail, and efforts were made to ensure a diverse range of participants. To ensure the reliability of the research, the raw data were kept by the researcher and the quotations from the data were shared directly in the findings section without any interpretation. To ensure consensus among the coders, the analyses were examined by an academic expert in the field of classroom teaching, and the consistency between the codes was checked. Using Miles and Huberman's (1994) reliability formula, the inter-coder agreement rate was calculated as 89%. Since the result obtained was more than 80%, it was accepted that the coding was reliable.

FINDINGS

In this section, the findings obtained by analyzing the opinions of classroom teachers, inclusion students, and parents regarding the inclusive practices implemented in the social studies lesson during distance education are presented.

Findings on Classroom Teachers' Opinions Regarding Inclusive Practices Applied in the Social Studies Lessons During Distance Education

In this section, the findings obtained by analyzing the opinions of the classroom teachers in the study group are presented.

Table 1. Classroom teachers' opinions on the practices, methods, techniques, and materials used in the social studies lessons during distance education

Theme	Category	Codes	f
Method, Techniques and Materials	Additional Practices for Inclusion Students	No separate application	8
		Preparing work according to the student	4
		One-to-one work with the student	3
	Methods and Techniques Used in the Lesson	Direct instruction	5
		Question and answer (Q&A)	5
		Discussion	5
		Conducting research	3
		Homework assignment	2
		Learning by doing	1
	Materials Used in the Lesson	Video/movie/documentary	7
		Digital education platforms	7
		Slides	4
		Source books	3
		Educational games	2
		Maps	2
		Earth globe	1

As seen in Table 1, eight of the classroom teachers stated that they did not make any differentiated application for inclusion students, four of them prepared activities according to the student, and three of them did one-to-one work with the student. The statements of the classroom teachers regarding these findings are as follows:

T6: "I didn't do it. We didn't have the opportunity to do it anyway in terms of duration in distance education. Lesson hours were enough anyway."

T4: "I sent it, yes, they were also making it and sending it with photographs, but we did it that way."

T5: "We had prepared separate work programmes with them. They sent them to me."

According to Table 1, in the social studies lessons during distance education, five of the classroom teachers stated that they gave lectures, five of them used the question-answer method, five of them carried out classroom discussions, three of them had students do research, two of them gave homework and one of them employed learning by doing and experiencing strategy. The opinions regarding these findings are as follows:

T2: "In the social studies lesson, we projected our source books on the screen. I explained the subject a little bit by sharing the subject with the children. We processed it in the form of Q&A."

T5: "By doing and experiencing. For example, I was making them do some stuff on the screen, even if it was on the screen, and they were trying to do it. I was assigning homework and showing them how to do it. They did it themselves at home."

T3: "Of course, we try to make more visual expression. But I asked them to do research to make them participate in the lesson. They did research and made presentations."

According to Table 1, seven of the classroom teachers stated that they watched videos, films, and documentaries, seven of them used digital education platforms, four of them used slides, three of them used source books, two of them used educational games, two of them used maps and one of them used the globe model in the social studies lesson during distance education. The opinions regarding these findings are as follows:

T8: "I used Okulistik, Morpa Kampüs instead of lecturing in front of the screen. There are very nice games."

T6: "Lecture, repetition, working with tools, we use materials such as atlas, globe. We couldn't do any excursions, of course nothing happened."

T4: "We finished the textbook. We also benefited from source books."

Table 2. Classroom teachers' opinions on the efficiency of social studies lessons for inclusion students during distance education

Theme	Category	Codes	f
Efficiency of Social Studies Lessons	Positive Feedback	Acquisition of outcomes	7
		Active attendance in the lesson	3
		Course being verbal	1
		Familiarity of the subjects	1
	Negative Feedback	Lack of attendance to the lesson	9
		Non-acquisition of achievements	8
		Lack of one-to-one attention	6
		Intensive subjects	2
		Difficulty in learning	2
		Distraction	1
		Inappropriateness of age group to distance education	1
		The student is not at grade level	1

According to Table 2, seven of the classroom teachers, who expressed positive opinions about the efficiency of the social studies lessons, stated that the achievements were acquired, three of them stated that the students actively participated in the lesson, one of them stated that it was efficient because it was a verbal course and one of them stated that the subjects were familiar. The opinions regarding these findings are as follows:

T5: "I achieved the gains. The gains occurred."

T6: "It was not enough but it was good. I have no problem with mine anyway. It is enough for them, but the lesson time is not enough. They both participated in the lesson."

T3: "Since social studies is a verbal lesson, it was more efficient."

As shown in Table 2, nine of the classroom teachers who expressed negative opinions about the efficiency of the social studies lessons stated that the students did not participate in the lessons, eight of them stated that the gains were not acquired, six of them stated that one-to-one attention could not be shown to the students, two of them stated that the subjects were intense, two of them stated that learning became difficult in this process, one of them stated that attention was distracted in distance education, one of them stated that the age group was not suitable for distance education and one of them stated that the students were not at the class level. The opinions regarding these findings are given below.

T1: "None of the lessons were productive for inclusion students since they are special, they need to be dealt with one-to-one and face-to-face eye contact should be made. Unfortunately, it is not efficient when it is done on computers and screens."

T14: "It was not productive, I think they are the ones who suffer the most in distance education because they do not have certain characteristics. (...) They could not participate in the lessons healthily, one of them was able to participate a little bit after the tablet."

T2: "Since inclusion students already had attention problems, they had difficulty in adapting and concentrating on the screen. (...) Distance education was a problem for children with learning difficulties. It made it more difficult for children to learn. It distracted their attention even more."

Table 3. Classroom teachers' opinions on the participation of inclusion students' parents during distance education

Theme	Category	Codes	f
Parental Participation in the Process	Teacher-Parent Communication Status	Telephone call	14
		No communication	4
	Participation of Parents in the Process	Parent-teacher co-operation	7
		Student support in the process	5
		Non-participation in the process	4
		Providing assistance in lessons	2

As shown in Table 3, classroom teachers stated that they were able to contact 14 parents by phone, while they could not contact four of them. The opinions regarding these findings are as follows:

T1: "I was lucky. My student's parent was a conscious one. We were in constant communication."

T11: "I called her a lot, but you should see the parent though. (...) I mean, sometimes she picks up my phone and sometimes she doesn't."

T12: "I never had any contact with one of them. Whenever I called him, she never returned my calls and never responded to my messages. But with the other one, whenever I called, I reached her and talked to her."

According to Table 3, seven of the classroom teachers stated that parent-teacher co-operation was established, five of them stated that parents supported their students in the process, four of them stated that parents did not participate in the process, and two of them stated that parents helped students in lessons. The opinions regarding these findings are as follows:

T1: "I gave one-to-one summer programmes and we practiced them together during the summer holiday. We were always in contact. She also goes to a special education institution and takes lessons there. We were in constant communication, I can say so. The parent actively participated in the process."

T13: "Without the support of her family, she might have had difficulties in social studies lessons on her own, but her mother was always with her and she never missed a live lesson."

T11: "She is always in the mode of "I don't want to deal with it, let the school deal with it." (...) She is not very co-operative."

Table 4. Classroom teachers' opinions on social studies lessons content provided by MoNE during distance education

Theme	Category	Codes	f
Content Provided by MoNE	Positive Feedback	Utilisation of related websites	8
		Benefiting from source books	5
		Fun activities	1
	Negative Feedback	Resources suitable for inclusion students	10
		Inadequate presentation of lesson content	3
		No face-to-face contact	1
		Causing distraction	1
		Lack of interest	1
		Not suitable for the age group	1

According to Table 4, eight of the classroom teachers who expressed positive opinions about the social studies lessons content provided by the MoNE stated that they used the related websites in the lessons, five of them stated that they benefited from the source books sent, and one of them stated that they found the content entertaining. The opinions regarding these findings are as follows:

T3: "For me, it was very good. I benefited from EBA very much. I also sent it to my students, it was well done. Workbooks were sent and we are doing very well with them even now."

T2: "Not the textbooks distributed at first, but the workbooks were very good. Those books were very good for explaining the subject as a class and applying the studies on that subject. We benefited a lot from it."

T7: I did not watch EBA TV much, but the explanation on the internet is very good. They did it in a fun way without boring the children."

As seen in Table 4, 10 of the classroom teachers who expressed negative opinions about the social studies lessons content provided by MoNE stated that resources suitable for inclusion students were not provided, three of them stated that the lesson content was presented inadequately, one of them stated that there was no face-to-face contact, one of them stated that it caused the distraction, one of them stated that the content was not interesting and one of them stated that the age group was not suitable for this form of education. The opinions regarding these findings are as follows:

T1: "To me, it is not very productive. Neither the television nor the live lessons we do. Unless we make face-to-face contact, you cannot be very productive. Somehow those children get distracted. They have a lot of stimuli at their disposal. They need to have self-control, but these are fourth-grade students. They are kids. There is no such thing, they are a little involved in the games and stuff. So I don't think it is enough in every sense. I also don't think the explanations there, are enough. I don't think the opportunities provided to us are enough. (...) Workbooks were sent. But not for my inclusion students. Workbooks were sent for all students. We learned the lesson through them. There was nothing specifically for inclusion students."

T4: "There is already something like this. Everything is adjusted for normal children. So what about these children? I feel so sad for these children."

T6: "Well. I don't think it is very effective. They are not interesting too. For example, Morpa Kampüs had very good lectures. I liked it more than EBA."

Table 5. Opinions of classroom teachers on the problems experienced by classroom teachers in social studies lessons inclusive practices during distance education

Theme	Category	Codes	f
Problems Experienced in Inclusive Practices	Technical Issues	Internet problems	4
		Operational problems	3
	Problems Arising from Process	Inability to allocate time for inclusion students	5
		Insufficient knowledge on the process	1
		Insufficient knowledge on the special education	1
	Problems Caused by Parents	Interfering in the lesson	2
		Parent apathy	2

According to Table 5, four of the classroom teachers stated that they had internet problems and three of them stated that they had systemic problems. The opinions regarding these findings are as follows:

T1: "Of course, the connection problem was already a technical problem, we had a lot of technical issues. Logging out of lessons, children can't turn on their microphones, etc. I can't get a response. There was the inadequacy of the infrastructure or internet problem."

T6: "Technologically, there was a constant connection problem. Either I could not log in or the children could not. (...) We had more connection problems in EBA anyway."

T14: "There are always problems. My husband is a teacher, so am I, and my daughter is a student. The internet slows down, freezes, and disconnects at the same time."

As seen in Table 5, five of the classroom teachers stated that they could not allocate time for inclusion students, one of them stated that there was insufficient information about the process and one of them stated that they had insufficient knowledge about special education. The opinions regarding these findings are given below.

T3: "I don't want to say that they are ignored, but they remain in the background. You also want to give him/her a say. For example, you can take care of it while others are doing something, but not in distance education."

T11: " Besides, it was like they threw us into the sea all of a sudden. We do not know what EBA is. But they threw us directly into the work. I, for one, did not know Zoom at all."

T15: "Recently, autistic students are very common. I worked in Istanbul for 10 years. I have always said that classroom teachers should definitely receive education on this subject. How to treat them and how to integrate them into the class. Yes, we all know something, but we need to learn from the experts."

According to Table 5, classroom teachers stated that two parents intervened in the lesson and two parents were indifferent. The opinions regarding these findings are as follows:

T4: "The parent had a baby during the pandemic period. She never attended live classes. She did not go to special education."

T1: "The family immediately steps in and supports to protect their child. When I ask a question, the family immediately intervenes and helps him answer."

T8: "She is a parent who has problems in her personal life due to personal circumstances. They went through a divorce this year. You know, the children were not very focused."

Table 6. Classroom teachers' suggestions for increasing the efficiency of social studies lessons inclusive practices during distance education

Theme	Category	Codes	f
Suggestions for Social Studies Lessons	Suggestions for MoNE	Providing one-to-one distance education	5
		Providing face-to-face support education	5
		Printing source books suitable for inclusion students	4

As seen in Table 6, five of the classroom teachers suggested that one-to-one distance education should be provided to inclusion students, five of them suggested that face-to-face support education should be provided to inclusion students and four of them suggested that source books suitable for inclusion students should be published. The opinions regarding these findings are as follows:

T2: "Different workbooks could have been sent for students with special learning diagnoses. It is oversimplified. (...) Or what can be done? Instead of attending every lesson with the class and doing six lessons with me every day, they can take three individual lessons. One-to-one work can be ensured."

T3: "When you look at those, who are inclusion students in distance education, section by section, distance education is not very efficient. Maybe it can be done distance when they are one-to-one."

T1: "In this process, maybe they could have been taken to face-to-face education, even once a week. Because as I said, inclusion students are special students. You have to make eye contact with that child so that you can communicate. (...) Students should have been taken to one-to-one lessons one day a week."

Findings on Inclusion Students' Opinions Regarding Inclusive Practices Applied in the Social Studies Lessons During Distance Education

In this section, the findings obtained by analyzing the opinions of the inclusion students in the study group are presented.

Table 7. Inclusion students' opinions on distance education

Theme	Category	Codes	f
Views on Distance Education	Positive Feedback	Enjoyable	2
		Away from bullying	2
		Education opportunities	1
		Freedom	1
	Negative Feedback	Social interaction	9
		Boring	4
		Interactive environment	3
		Screen sensitivity	2
		Connection issues	1
		Class management	1
	Education Preference	Face-to-face education	13
		Distance education	2

As seen in Table 7, two of the inclusion students, who expressed positive opinions, stated that distance education offers a pleasant environment, two of them stated that it is a teaching environment away from bullying, one of them stated that it offers educational opportunities and one of them stated that distance education is more free. The opinions regarding these findings are as follows:

IS2: "It is very easy, for example; music lessons, physical education, visual arts, I liked it very much."

IS9: "It is better there (distance education). There are so many fights at school. Sometimes at school, there are things like, "Why aren't you in uniform?"

IS6: "I think it was not that good and not that bad. It was not bad because at least we were not left behind and we could get an education. But we could still fall behind because sometimes EBA crashes and the teacher has to deal with Zoom."

According to Table 7, nine of the inclusion students, who expressed negative opinions, stated that there was a lack of social interaction, four of them found distance education boring, three of them stated that there was no interactive environment, two of them stated that they had screen sensitivity in distance education, one of them stated that they had too many connection problems and one of them stated that the teacher had difficulty in classroom management. The opinions regarding these findings are as follows:

IS2: " Anyway, computers always tire our eyes and head. It is better at school, live lessons are just too boring. I also have difficulty getting up in the morning, I couldn't get used to it."

IS4: "Because I have friends in face-to-face education. Sometimes the teacher may not see when I raise my finger."

IS8: "I mean, it is a good thing to come to school, but it is not better than the tablet. Because I can't see the school, so I can't do anything. Sometimes children miss their teachers and then feel sad. For example, like me."

As seen in Table 7, 13 of the inclusion students prefer face-to-face education while two of them prefer distance education. The opinions regarding these findings are as follows:

IS9: "Distance education is even better, it is better this way. (...) There are a lot of fights at school."

IS2: "I see my good friends at school better. We get to play with them at recess."

IS15: " I used to run away under the table every time I logged in, then I used to play with my toys there while waiting for it to end. (...) It is better if we do it face to face."

Table 8. Inclusion students' opinions on the social studies lessons during distance education

Theme	Category	Codes	f
Social Studies in Distance Education	Lecture Method	Teacher lecture only	10
		Mutual reading	6
		Question solving	4
		Writing	4
		Activities	3
		Watching video	3
		Homework assignment	1
		One-to-one work	1
	Productivity Level	Disengaged from the lesson	10
		Sameness	4
		Achievement of gains	1
	Views on Practices	Face-to-face education preference	6
		Boring	4
		Non-interactivity	2

According to Table 8, 10 of the inclusion students stated that there was only teacher lecturing, six of them stated that there were mutual readings from the textbook, four of them stated that they did question solving, four of them stated that they taught the subject by writing in notebooks, three of them stated that they did activities, three of them stated that they watched supportive videos from various websites, one of them stated that they taught the lesson with the homework given and one of them stated that they worked one-to-one with the teacher. The opinions regarding these findings are as follows:

IS2: "We studied our book. We write in the notebook. (...) For example, s/he makes us read some things. S/he makes us read such things. (...) We did puzzles and stuff from the book."

IS6: "There are many subjects in social studies lessons. When there were too many subjects, I guess the teacher thought that I would not be able to complete it, and she sometimes told us about it. That's why she had to give some subjects for us to study."

IS7: "We listened to Morpa Kampüs, we did the exercises, we read from the book. (...) We do homework sometimes. For example, I go to my teacher. Then s/he gives me homework and I do it."

According to Table 8, 10 of the inclusion students stated that they were disengaged from the lesson, four of them stated that it was the same with face-to-face education and one of them stated that they achieved the outcomes. The opinions regarding these findings are as follows:

IS8: "I forgot all the lessons. (...) Social studies, I mean, science is being done. Something like that. I am not really interested in social studies."

IS4: "I can understand and read in the live lesson just like face-to-face education. Both seemed the same to me."

IS11: "I think I learned. (...) We learn more in online education. We learned a little faster in online education."

According to Table 8, six of the inclusion students stated that this lesson should be conducted with face-to-face education, four of them found the lessons boring, and two of them stated that the lessons were not effective due to lack of interaction. The opinions regarding these findings are as follows:

IS2: "It was not very good. Especially some of my friends had headaches. Breaks are always short. The teacher always lectures. It gets boring. School is a little bit better than that."

IS9: "I mean, I would learn better if I were at school."

IS8: "Before distance education, we were doing it on the board, it was nice to do it, everyone was taking turns. Now we write in the notebook there. The teacher used to ask questions on the board."

Table 9. Inclusion students' opinions on the social studies lessons broadcasted on television during distance education

Theme	Category	Codes	f
Social Studies Lesson Broadcast on Television	Watching Status	Watched	10
		Didn't watch	5
	Positive Feedback	Understandable	4
		Fun	2
		Instructive	2
		Opportunity to repeat	1
		Individuality	1
		Easy access	1
	Negative Feedback	Boring	4
		Lack of interaction	3
		Inability to understand	2
		Non-compliance with the level	1

According to Table 9, 10 of the inclusion students stated that they watched the lesson broadcasted on television, while five of them stated that they did not. The opinions regarding these findings are as follows:

IS1: "I watched it. I also watched it in social studies, but it was bad. It is not good from the TV."

IS9: "No, I did not see them (social studies lesson)."

IS15: "I couldn't watch it much. My brother was born and I couldn't watch it at all."

As seen in Table 9, four of the inclusion students, who expressed positive opinions, stated that the lessons were understandable, two of them stated that they were fun, two of them stated that they were instructive, one of them stated that they offered the opportunity to repeat, one of them stated that they offered an individual learning environment and one of them stated that they provided easy access to education. The opinions regarding these findings are as follows:

IS7: "I mean, it was good, it was nice. It was fun."

IS6: "I think they are fun. (...) They were also very good at social studies. I improved more thanks to the live lesson. You learn there instead of falling behind."

IS10: "It was better because I didn't have any friends and no one raised their fingers, so I wasn't stressed and at the same time I learned the answer to the question. (...) At least the teachers wouldn't get angry. Also, the teachers' internet won't slow down."

According to Table 9, four of the inclusion students, who expressed negative opinions, stated that the lesson was boring, three of them stated that there was no interaction, two of them stated that they could not understand the lessons and one of them stated that the lesson was not suitable for their level. The opinions regarding these findings are as follows:

IS9: "They were a bit good. I didn't listen to them much, I switched them off immediately. (...) I couldn't understand them very well."

IS12: "Of course it is boring. If you add a little more fun, maybe it will be watched. But I think TRT could not achieve this. It is very boring."

IS11: "It is better when my teacher explains it because I can ask questions there. I can learn the answers to the questions I ask."

Table 10. Inclusion students' opinions on the problems experienced in the social studies lessons during distance education

Theme	Category	Codes	f
Problems in Social Studies	Technological Problems	Internet problem	8
		Inability to use the system	6
		Audio and visual problems	2
		Power blackout	2
	Problems Related to the Lessons	Learning by heart	2
		Intensive subjects	2
		Lack of information	1
		Falling behind	1
	Environmental Problems	Inability to attend class	3
		Lack of social environment	1

According to Table 10, eight of the inclusion students stated that they had internet problems, six of them stated that they could not use the system, two of them stated that they had audio and video problems and two of them stated that they had power cuts. The opinions regarding these findings are given below.

IS3: "It was a little bit bad. Because, for example, there are problems with my mum's internet. It also happens sometimes with my teacher. I logged out and sometimes the teacher logged out by mistake. (...) There are also camera and sound problems."

IS6: "Yes, my friends also had problems. I also had problems after my mum went to the lesson. When I stay at home alone, I may not know how to enter, so it's a bit bad."

IS7: "No. But I had a problem while connecting. I logged on to the first lesson, but I couldn't log on to the second lesson, the power went out. The internet went out."

According to Table 10, two of the inclusion students stated that they had problems because the lesson topics were based on rote learning, two of them stated that the topics were intense, one of them stated that there was a lack of knowledge and one of them stated that they could not keep up with the pace of the lesson and fell behind. The opinions regarding these findings are given below.

IS6: "I had a problem with the National Fight for Independence, which is about Atatürk. I have a problem with the dates, but I can't remember the dates. That's why there was a little bit of trouble there."

IS2: "I was able to understand. We also had difficulties. For example, in the live lesson, some of our friends or I could not finish it. Then I started to write fast."

IS15: "I had a little bit of trouble. For example, I know some things wrong and some things right, but mostly because I know wrong, there were problems."

According to Table 10, three of the inclusion students stated that they could not attend the lessons for various reasons and one of them stated that they had a lack of social environment. The opinions regarding these findings are as follows:

IS10: "I am usually a person who does not participate much because I always have stuff going on. I have a course, we go back and forth to Istanbul, and my father goes back and forth. I have a brother and I have to take care of him. I mean, I usually cannot participate because I'm constantly busy."

IS11: "Sometimes I had to do something during the live lesson time."

IS8: "No, I haven't had this problem, but I often can't see my friends. I used to always look behind me when I was in class, now I can't even look behind me. I can only see the lesson on the screen."

Table 11. Inclusion students' suggestions for increasing the efficiency of the social studies lessons during distance education

Theme	Category	Codes	f
Suggestions for Social Studies Lessons	Suggestions for the Lessons	Interactive activities	5
		Educational games	3
		Being fun	3
		Offering different contents	3
		Level appropriate questions	2
		Visual support	2
	Environmental Suggestions	Family & teacher support	1
		Solving the connection problem	1

As seen in Table 11, five of the inclusion students suggested interactive activities, three of them suggested using educational games, three of them suggested making the lesson more fun, three of them suggested presenting different contents in the lessons, two of them suggested asking questions appropriate to the level and two of them suggested supporting the lesson with visuals. The opinions regarding these findings are as follows:

IS3: "You can't make everyone like reading you know, some of us don't even like the social studies. For example, they might like it if it was a little bit fun. (...) Like cut and paste is always in English lessons. If it was like that, we would have liked it way too much."

IS4: "You know, there could be some question-solving like that. I am very interested in pictures. I like figures, let's have them."

IS12: "It would be better if the book included more cultures and fun. It could also include cultural adventures too. (...) I think my teacher could have made it a little more fun."

According to Table 11, one of the inclusion students stated that they needed family and teacher support and one of them stated that connection problems should be solved. The opinions regarding these findings are as follows:

IS8: "I mean, I would like them to help me in the lessons. Though they do help. My mum helps me when I fall short in lessons. Now I am in the fifth grade, but God knows how I did it."

IS10: "For example, he could go to a place with better reception. Because the teacher's internet was constantly going out and I was already starting to not understand."

Findings on Parents of Inclusion Students' Opinions Regarding Inclusive Practices Applied in the Social Studies Lessons During Distance Education

In this section, the findings obtained by analyzing the opinions of the parents of inclusion students in the study group are presented.

Table 12. Parents' opinions on social studies lessons practices during distance education

Theme	Category	Codes	f
Social Studies Lessons Practices	Opinions on Practices in Live Lessons	Unwillingness to participate	7
		Incomplete learning	5
		Inability to focus on the lesson	4
		Failure to present the lesson in accordance with the student level	3
		Acquiring outcomes	2
		Boring	1
		Fun	1
		Crowded class	1
		Associating with current life	1
	Opinions on Television Broadcasts	Did not watch	11
		Watched	4
		Not suitable for student level	2
		Opportunity to repeat	1
		Fun	1
		Topics being ahead	1
		Lack of interaction	1
		Lack of attractiveness	1

According to Table 12, seven of the parents stated that their students did not want to participate in the lessons, five of them stated that their students had incomplete learning, four of them stated that their students could not focus on the lessons, three

of them stated that the lessons were not presented in accordance with the student level, two of them stated that their students acquired the outcomes, one of them stated that it was boring, one of them stated that it was enjoyable, one of them stated that it was inefficient due to the crowded class and one of them stated that the lessons were associated with current life. The opinions regarding these findings are as follows:

P4: "It cannot be efficient in that crowded environment. (...) There was missing information. We had problems in maths and social studies."

P12: "Maybe it contributed, but I don't think it was efficient. I don't think it was as effective as face-to-face education. (...) I think social studies contributed a little bit, you know, how to behave in life."

P2: "Well, maybe the school was not successful, but it was good. It was distance education, but the children still learned. Their exams were also good."

According to Table 12, 11 of the parents stated that their students did not watch the lessons on TV, four of them stated that their students watched the lessons, two of them stated that the content was not suitable for the level of the students, one of them stated that it offered the opportunity to repeat, one of them stated that it was fun, one of them stated that the subjects taught were ahead of the curriculum, one of them stated that there was no interaction between teacher and student, and one of them stated that the content was not remarkable. The opinions regarding these findings are given below.

P5: "She couldn't watch it because there was no TV."

P8: "He never got it from TV. No, I mean he never paid attention. Because the child can't keep up with the narration too. He can't ask questions either."

P3: "Honestly, I like it. I installed TRT on my phone, and in the evenings before going to bed, I tell her to listen to these. She listened to the repetitions on EBA."

Table 13. Parents' opinions regarding the information and support provided by the classroom teacher for the social studies lessons during distance education

Theme	Category	Codes	f
Support provided by the Classroom Teacher	Communication Status with the Teacher in the Process	Telephone call	13
		No call	2
	Information Provided by the Teacher	Material support	1
		Observing the student	1
		Guidance to special education	1
		Guidance on education	1
	Supplementary Work Presented by the Teacher	No study conducted	6
		Homework assignment	6
		No need for one-to-one study	2
		One-to-one study	1

As seen in Table 13, 13 of the parents stated that they had telephone contact with the classroom teacher, while two of them stated that they did not. The opinions regarding these findings are as follows:

P2: "When something happened, we could talk on the phone immediately."

P4: "We were in constant communication with our teacher. I was texting her on WhatsApp."

P14: "We were not much because she did not attend many classes."

According to Table 13, one of the parents stated that the classroom teacher provided material support, one of them stated that observed the student regarding the student's disability, one of them stated that referred the student to special education and one of them stated that provided information about the student's education. The opinions regarding these findings are as follows:

P9: "She always called me during distance education. She was interested in all kinds of children's problems. When we came the other day, she gave books and EBA papers for him again."

P4: "I was texting my teacher on WhatsApp that his medicine has changed and we are using this medicine, but the teacher cannot observe this in distance education. Nevertheless, she was trying to observe it."

P1: "I couldn't pay much attention to her, but I am very satisfied with my teacher, I sent her to the training with her guidance."

According to Table 13, six of the parents stated that no study was done, six of them stated that homework was given, two of them stated that their students did not need one-to-one study and one of them stated that one-to-one study was done. The opinions regarding these findings are as follows:

P13: "Our communication was good. But no extra work was done, she participated in whatever was done with the class."

P8: "Yes, she did the exams separately. She was very interested in my student. She even made him work by being interested in him one-on-one."

P9: "His homework was always extra and different. In a way that could always help him."

Table 14. Parents' opinions on the problems experienced by students in social studies lessons inclusive practices during distance education

Theme	Category	Codes	f
Problems in Social Studies Lessons	Problems Related to the Lessons	Unwillingness	7
		Lack of active participation	4
		Attention deficit	3
		Lack of one-to-one support	2
		Bullying	2
		Miscommunication	2
		Not understanding the lesson	1
		Speaking in unison	1
	Technological Problems	Internet problem	5
		Systemic problems	3
		Lack of technological equipment	2

According to Table 14, seven of the parents stated that the student was reluctant towards the lesson, four of them stated that the practices in the lessons did not provide active participation, three of them stated that the student had attention deficit, two of them stated that the student was not supported in the lessons, two of them stated that the student was bullied by classmates, two of them stated that there was no one-to-one communication between the student and the teacher, one of them stated that the student could not understand the lesson and one of them stated that there was talking in the classroom. The opinions regarding these findings are as follows:

P12: "Our student already has ADHD. We can only force him to attend the lessons. There is no beauty with force. I don't think he learned anything because he didn't pay attention to the lessons."

P3: "In this process, my opinion is that the gains that should be achieved are clear. The materials are also rich, there is only a lack of motivation. (...) It is also due to the classroom environment. For example, his voice was not heard and his classmates immediately made fun of him. He cannot handle these situations. Therefore, he prefers not to participate. He never liked his class."

P10: "It was a difficult process. He is a student who requires special attention in face-to-face education. When he is not addressed directly in front of the screen during distance education, he breaks up."

As seen in Table 14, five of the parents stated that there were problems with internet access, three of them stated that there were problems due to the system and two of them stated that there were problems due to lack of technological equipment. The opinions regarding these findings are as follows:

P2: "Sometimes he could not access EBA for a few lessons, but it was related to the system. We didn't have internet at first, he used to access it from his phone, but then we bought it. We didn't have a computer, we needed it for other children, so we bought that too."

P5: "He cannot do it because of the internet. It is better if it is face-to-face. Distance education is not possible. We had internet and phone problems, we couldn't log in. Sometimes he can't attend two or three lessons."

P9: "When the first distance education started last year, we could not connect to the live lesson in any way except for 2-3 weeks of one semester. It constantly refuses, too busy, too crowded.

Table 15. Parents' opinions on increasing the efficiency of social studies lessons inclusive practices during distance education

Theme	Category	Codes	f
Suggestions for Social Studies Lessons	Suggestions for MoNE	Face-to-face education	9
		Provision of support education	7
		Imposing various sanctions	1
	Suggestions for the Lessons	Use of visual materials	4
		Special care	1

As seen in Table 15, nine of the parents stated that face-to-face education could be provided, seven of them stated that support education should be provided and one of them stated that various sanctions could be applied to those who do not attend the lessons. The opinions regarding these suggestions are as follows:

P10: "I mean, for example, during this process, I wished that only inclusion students went to school. Because maybe we are in a good financial situation, but the students who are in a bad financial situation are completely locked in. I thought that only inclusion students could have a school permit, a teacher, a certain class, and a certain class time."

P12: "I would have preferred it to be face-to-face. Maybe there could have been different sanctions for distance education to be more effective, such as if there are five lessons a day, the grades of students who do not attend one or two of them will be lower or lowered. I think participation would be higher if there could be different sanctions."

P14: "I think support education should have been more. Otherwise, he is just a listener and a spectator next to other students, and he gets bored."

According to Table 15, four of the parents stated that the lessons should be supported with visual materials and one of them stated that special attention should be paid to inclusion students. The opinions regarding these findings are as follows:

P13: "I mean, my student likes more fun stuff and is interested in it. There could be more things like this. His interest could have been attracted by using things like cartoons etc."

P11: "Actually, I think one-to-one teachers should constantly call and ask about these things more closely. Okay, they should also call other students, but these students need to be emphasized more."

P7: "I think it should be more activity-based because they are in primary school but they are seeing social studies for the first time. I think it should not be like reading, telling, memorizing."

DISCUSSION AND CONCLUSION

The research concludes that the majority of classroom teachers did not take inclusive measures for students with disabilities in social studies lessons during distance education. It was found that teachers did not carry out differentiated practices due to several reasons such as time limitations, not knowing the student, and students not needing support. Furthermore, some teachers devised appropriate activities for the students, while others provided individual attention to their students. In the related studies, similar to the findings of this study, it was observed that homework was assigned to students with special needs (Stambekova et al., 2022), homework was given to students with literacy difficulties (Çavdarlı & Karadağ Yılmaz, 2022), and one-to-one online lessons were held in addition to homework (Yüksel Başar & Gündüz, 2022). Additionally, several studies indicated that educational services were not provided during the pandemic and there was a lack of implementation of Individualised Education Plan (IEP) practices (Karasel Ayda et al., 2020; Yazçayır & Gürgür, 2021). This may arise from the prevailing conditions and the teacher's level of attitude and competence.

It was concluded that classroom teachers used a range of methods including, Q&A, discussion, research, homework, and experiential learning in the social studies lessons during distance education. Another finding revealed that teachers also utilized audio-visual aids such as videos, films, documentaries, digital education platforms, slides, resource books, educational games, maps, and globes. This result is in line with the findings of several other studies investigating the issue (Tanta, 2021; Uyar, 2020; Yeşilyurt, 2021) and shows that similar methods, techniques, and materials were used during distance education.

Another result of the study is that classroom teachers predominantly evaluate the effectiveness of the social studies lessons during distance education as unfavorable to inclusion students. The teachers reported a lack of student participation in lessons, failure to achieve learning objectives, insufficient attention given to individual students, excessive subject intensity resulting in difficulties with learning, distractions from attention, difficulty in students' adaptation to distance learning, and insufficient level of education of the student. The study also reveals that classroom teachers evaluate the efficiency of the social studies lessons during distance education as mostly negative in terms of inclusion students. Regarding this, the teachers stated that there was no participation in the lessons, learning outcomes were not achieved, there was no one-to-one attention in the students, the subject was too intense, learning became difficult, the attention of the students was distracted, the age group was not suitable for distance education, and the students were not at the class level. In other studies, teachers similarly stated that there were not enough distance education materials for students with special needs (Karasel Ayda et al., 2020), students with special needs cannot benefit from distance education unless a great deal of support is provided (Scepanovic & Nikolic, 2020), inclusion students face challenges in adapting to the distance education, encountering difficulty when acquiring learning outcomes and losing motivation (Aslan et al., 2023; Mengi & Alpdoğan, 2020; Yüksel Başar & Gündüz, 2022), social studies lessons subjects were challenging for inclusion students (Sarılarhamamı & Demirkaya, 2021).

The research found that communication between teachers and parents primarily occurred via telephone. Co-operation between parents and teachers was ensured and parents supported their students. Conversely, parents who did not communicate with teacher did not actively participate in the process. Mengi and Alpdoğan's (2020) study supports the notion that parents exhibit cooperation with teachers during distance education. However, there are also studies (Çavdarlı & Karadağ Yılmaz, 2022; Stambekova et al., 2022; Yazçayır & Gürgür, 2021; Yüksel Başar & Gündüz, 2022; Yüksel et al., 2021) showing that some parents do not offer support to their children during the education and may remain indifferent. Teachers mostly expressed negative opinions about the content provided by MoNE during distance education. It was determined that there were inadequate resources for inclusion students, the lessons were poorly presented, there was no face-to-face contact, it was distracting, the publications were not interesting, and did not appeal to the age group. On the other hand, it has been observed that the teachers utilizing related websites, use source books and find the activities enjoyable. However, Aslan et al. (2023)'s and Mengi and Alpdoğan (2020)'s investigations determined that the EBA and EBA TV resources were unsuited to students with special needs, that special education content was not provided, and that the materials used were not fit for purpose.

It was concluded that teachers faced challenges with inclusive practices implemented in the social studies lessons, mainly due to the internet and the system used; however, they could not spare time for the included student, had insufficient knowledge about the distance learning process and special education, parents intervened in the lessons and some parents were indifferent. Similar findings were observed in related studies indicating that teachers encountered challenges with internet connectivity, technical issues, infrastructure inadequacies, and lack of parental support during distance education (Akgül & Oran, 2020; Çavdarlı & Karadağ Yılmaz, 2022; Korkut & Memişoğlu, 2021; Uyar, 2020). Additionally, teachers reported difficulty in allocating sufficient time for students with special needs (Yüksel Başar & Gündüz, 2022).

The study determined that inclusion students had mostly negative opinions about distance education. The findings indicate distance learning presents limited prospects for both social interaction and interactive learning, and is rather tedious. The study states that extended screen time led to sensitivity in students. Sirem and Baş (2020) determined that during the pandemic, students experienced distress caused by separation from their peers, resulting in feelings of isolation, loneliness, and boredom during distance education. Conversely, according to students' positive opinions, the distance education was pleasant, free of bullying, offered academic opportunities, and fostered an open atmosphere. Consistent with previous research (Akgül & Oran, 2020; Korkut & Memişoğlu, 2021; Özdoğan & Berkant, 2020), education is carried out in a comfortable environment during distance education.

As per additional findings from the study, most inclusion students prefer face-to-face education to distance education. However, it is a remarkable result that distance education is far from bullying in positive opinions. From this point of view, it can be said that distance education offers students the opportunity to receive education in an environment where they feel safe. To support this finding objectively, Nigmatov and Nasibulov (2015) suggest that the development of distance education technologies will enable students with special needs to receive education tailored to their individual requirements and capabilities, in a safe and secure environment. The study reveals that students have expressed concern in this regard.

According to the opinions of inclusion students in the study, it was concluded that the social studies lessons were mostly taught through teacher lectures and mutual readings. Additionally, it also includes problem-solving, writing assignments, practical exercises, video presentations, and homework assignments, as well as one-on-one work with teachers. It has been noted by educators (Tanta, 2021; Uyar, 2020) that the teaching of social studies during distance education typically relies on lecture and question-answer approaches.

In the study, it was concluded that most of the inclusion students were disconnected from the social studies lessons taught during distance education, and the level of efficiency decreased. Several students stated that the efficiency of the social studies lessons did not change whether it was face-to-face or distance education. It is seen that face-to-face social studies lesson practices are preferred, distance education practices are boring, and mutual interaction is not provided. In this regard, teachers stated that distance education is not sufficient in transferring social studies lessons outcomes (Yeşilyurt, 2021) and that efficiency is lower than face-to-face education (Uyar, 2020).

Most inclusion students watched the social studies lessons broadcasted on television during the distance education. After analyzing the positive opinions regarding the broadcasted lessons, it was determined that the lessons were comprehensible, enjoyable, and informative, providing the chance for repetition, facilitating personalized learning, and presenting ease of access. Conversely, the lessons were criticized for lack of engagement, minimal interactivity, low student comprehension, and unsuitability for the student's level.

During live social studies lessons, inclusion students faced technical difficulties. It was found that students encountered difficulties in connecting to the internet, using the system, and connecting audio and video. Similar findings have been observed in related studies (Akgül & Oran, 2020; Korkut & Memişoğlu, 2021; Özdoğan & Berkant, 2020). Concerning the lesson's difficulties, students reported struggling with the lesson due to heavy reliance on rote memorization, dense content, and a fast pace, resulting in a lack of understanding and falling behind. According to a different study, several students were unable to participate in class due to diverse home environment-related circumstances and faced difficulties with the lack of social interaction during lessons. Furthermore, students without any developmental setbacks noted that distance education's social studies workload was challenging, and they experienced decreased interactions with peers (Korkut & Memişoğlu, 2021).

In the research, most of the parent participants stated that their students did not want to participate in the lessons and that their students had incomplete learning. In addition, it was concluded that the lessons were not presented in accordance with the student level, that they were boring, and that the lessons were inefficient due to the crowded classes. A small number of parents reported that their children made progress, enjoyed the lessons, and found them relevant to their daily lives. It has been concluded in different studies that students' motivation to participate in distance education is low (Akgül & Oran, 2020; Erdem et al., 2021; Özdoğan & Berkant, 2020; Yazçayır & Gürgür, 2021; Yüksel Başar & Gündüz, 2022; Yurtbakan & Akyıldız, 2020), students could not concentrate (Akgül & Oran, 2020; Erdem et al., 2021; Gürbüz, 2022; Yüksel Başar & Gündüz, 2022), and that the lessons are not presented in accordance with the student level (Üresin et al., 2021).

According to the majority of parental opinions, the study concludes that EBA TV broadcasts provided during distance education were not followed by students. The broadcasts were criticized for not being suitable for the level of the students, not providing interaction, and not presenting the topics in an attractive way. According to some parents who reported that their children watched the broadcasts, the broadcasts provided an opportunity to review lessons and were entertaining. Similar statements were confirmed by parents who participated in another study (Üresin et al., 2021).

Most of the parents indicated that they contacted their teachers via telephone. Accordingly, teachers provided material support to parents and students, observed the student in the process, and provided guidance for special education and student's education. The fact that parents were in contact with their teachers during distance education and that the teacher provided information about student education is similar to the results of another study (Erdem et al., 2021; Yurtbakan & Akyıldız, 2020). Based on parental opinions, the majority of teachers did not provide any support for their students with special needs or only assigned homework. Although a few parents reported, that their children did not require individualized attention, and some one-

to-one work was provided. Overall, it appears that there is a lack of individualized studies for inclusion students, in line with the opinions of teachers and students. Some of the parents in Yüksel Başar & Gündüz (2022)'s study also stated that problems were experienced due to teachers' lack of attention.

In the study, parents mostly stated that their students had problems with the lessons. The most frequently recurring problem is the student's reluctance to participate. In addition, not providing active participation in the lessons, creating attention deficit in the students, not providing one-to-one support, exposing the student to bullying, not communicating, the student not understanding the lesson, and all the students in the class talking together are seen as other problems. In several related studies, parents have reported that students lacked interest and were reluctant to engage (Akgül & Oran, 2020; Erdem et al., 2021), could not actively participate (Özdoğan & Berkant, 2020), struggled to communicate with their teacher (Yurtbakan & Akyıldız, 2020), and were easily distracted (Erdem et al., 2021; Gürbüz, 2022). Regarding technical issues, internet problems emerged as the most prevalent, alongside systemic problems and inadequate technological resources. Prior research corroborates these findings (Akgül & Oran, 2020; Erdem et al., 2021; Gürbüz, 2022; Özdoğan & Berkant, 2020; Üresin et al., 2021; Yazçayır & Gürgür, 2021; Yüksel Başar & Gündüz, 2022).

Suggestions for increasing the efficiency of the social studies lessons during distance education were analyzed by considering three stakeholder views. In this context, teachers suggested to MoNE that one-to-one distance education be provided for inclusion students, face-to-face support be given, and resource books suitable for inclusion students be published. Teachers especially stated that students should be provided with distance or face-to-face support education through a teacher to be assigned by MoNE. During distance education, the lack of such support is considered a significant flaw. Similarly, parents have proposed the provision of face-to-face tutoring, support sessions, and measures to be taken against students who miss lessons. Inclusion students, on the other hand, mostly made suggestions for the lessons. Students suggested that interactive activities should be carried out, instructive games should be used, content should be presented in more fun and different styles, questions should be asked in accordance with the level of the student and the lessons should be supported with visuals. Parents, on the other hand, suggested that visual materials should be used in the lessons and teachers should pay special attention to students with special needs. Finally, it was suggested by inclusion students that connection issues should be resolved and that their families and teachers should provide support. Upon analysis of input from all three stakeholders, common suggestions were identified, and shared expectations were noted.

When examining the opinions of all stakeholders on the inclusive practices within distance education social studies lessons, the process appears to have been largely detrimental to inclusion students. In the interviews, teachers and parents frequently stated that the activities made during the pandemic process were made according to the level of students with normal development, so students with special needs remained in the background. In addition, students who did not have sufficient technological facilities were exposed to inequality of opportunity in education. In this case, although there was some unpreparedness for distance education, no changes were made to future practices. Consequently, the participation of inclusion students in education has decreased over time. According to the suggestions of the three stakeholder views, it is concluded that the necessity of one-to-one support in the education of inclusion students is inevitable. One-to-one training with inclusion students during distance education will make a great contribution to the education of the student. However, the fact that teachers and parents suggested face-to-face education suggests that they could not feel the seriousness of the epidemic or that they considered the education of their students more important than the epidemic.

RECOMMENDATIONS

In this study, which investigates practices of including social studies lessons during distance education from the perspectives of classroom teachers, inclusion students, and parents, the following suggestions can be made based on both the views of stakeholders and what the researcher saw in the field:

- Where possible, the needs of students with special needs should also be taken into consideration in the educational content prepared.
- During the pandemic, the MoNE distributed numerous resource books. It is imperative to consider students with special needs in the preparation of these resources. Adequate provisions should be made for them.
- The distance education has created inequality of opportunity for some students due to financial difficulties. In such cases, students in need should be identified and deprivation of education should be prevented.
- Support education services provided to students with special needs in inclusive education should be continued in distance education.
- During the period of distance education, the provision of education in special education and rehabilitation centers, which offer significant advantages for students with special needs, was disrupted. It is necessary to guarantee the continuity of students' newly attained skills by providing online training sessions delivered by special education centers in such circumstances.

- The distance education should not be seen as a tool to be used only during the pandemic period. With the applications to be developed, it can be offered as an additional service to students with special needs.
- To enhance the quality of distance education, teachers could receive in-service training on transferring educational content, methods, and materials to distance education.
- During distance education, parents as well as teachers had effects on students. To increase the efficiency of education, trainings should be organized for parents, and guidance services that can offer solutions to parents' problems should be provided.

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Statements of publication ethics

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

Researchers' contribution rate

The authors confirm contribution to the paper as follows: Study conception and design: Z.B.İ and N.Ş. Data collection, analysis and interpretation of results: Z.B.İ. M.C.D. and N.Ş. encouraged Z.B.İ. to investigate and supervised the findings of this work. All authors discussed the results and contributed to the final manuscript.

Ethics Committee Approval Information

The implementation of this research was ethically approved by the decision of Marmara University Institute of Educational Sciences Research and Publication Ethics Committee dated 19/03/2021 and numbered 2100082150.

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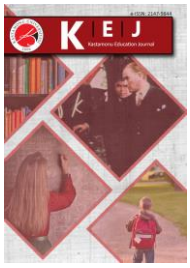

| Research Article / Araştırma Makalesi |

Analyzing Perception of Administrators and Teachers on Management of Schools by Values (Kızıltepe Case)

Okulların Değerlere Göre Yönetilme Durumlarına İlişkin Yönetici ve Öğretmen Algılarının Analizi (Kızıltepe Örneği)[1]

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Keywords
1. Management
2. Management by values
3. Organizational Structure
4. Socialization
5. Value

Anahtar Kelimeler
1. Yönetim
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3. Örgütsel Yapı
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Abstract

Purpose: The purpose of this study is to analyze the perception of administrators and teachers related to the management of schools according to values in terms of variables of gender, age, seniority, grade, school type, school region and profession type.

Design/Methodology/Approach: The research was conducted using mixed method. The population consists of 3338 administrators and teachers working in public and private primary, secondary and high schools in Kızıltepe district of Mardin in the 2021-2022 academic year. The sample of the quantitative part consists of 340 participants determined by simple random sampling technique, while the study group of the qualitative part consists of 10 administrators and 10 teachers selected by maximum diversity technique. The data for the quantitative dimension was collected using the "Management by Values Scale" developed by Yılmaz (2006). To collect the data of the qualitative dimension, a semi-structured interview form developed by the researcher and consisting of six questions was used. T-test was used for the variables of gender, profession type, school region and school type and ANOVA was used for the variables of age, seniority and grade. Tukey Test was used to determine the source of the values which have significant differences. Content analysis was used for qualitative data.

Findings: As a result of the analysis of both qualitative and quantitative data, it has been found that the participants have a positive perception about the management of schools according to values. However, no significant difference has been found between the groups according to the variables of gender, age, grade, school type, school region and type of profession. A significant difference has been found between the groups with 1-5 years and 11-15 years of working experience in the seniority variable.

Highlights: According to the data obtained from the research and also the literature review, it has been concluded that teachers and administrators have a positive perception that schools are managed according to values. There should be programs to educate managers since there is a substantial need for this based on this research.

Öz

Çalışmanın amacı: Bu araştırmanın amacı, okulların değerlere göre yönetilme durumlarına ilişkin yönetici ve öğretmen algılarının cinsiyet, yaş, kıdem, okul kademesi, okul türü, okul bölgesi ve görev türü değişkenleri açısından analizini yapmaktır.

Materyal ve Yöntem: Araştırma karma yöntem kullanılarak yapılmıştır. Araştırma evreni, 2021-2022 eğitim öğretim yılında Mardin ilinin Kızıltepe ilçesindeki resmi ve özel ilkokul, ortaokul ve liselerde görev yapan 3338 yönetici ve öğretmenden oluşmaktadır. Araştırmanın nicel boyutunun örneklemi, basit seçkisiz örnekleme tekniğiyle belirlenen 340 katılımcıdan oluşurken; nitel boyutun çalışma grubu ise maksimum çeşitlilik tekniğiyle seçilen 10 yönetici ve 10 öğretmenden oluşmaktadır. Araştırmanın nicel boyutunun verileri Yılmaz (2006) tarafından geliştirilen "Değerlere Göre Yönetim Ölçeği" kullanılarak toplanmıştır. Nitel boyutunun verilerini toplamak için ise araştırmacı tarafından geliştirilen ve altı sorudan oluşan yarı yapılandırılmış görüşme formu kullanılmıştır. Cinsiyet, görev türü, okul bölgesi ve okul türü değişkenleri için T-testi; yaş, kıdem ve çalıştıkları okul kademesi değişkenleri için ise ANOVA kullanılmıştır. Aralarında anlamlı fark olan değerlerin kaynağını tespit etmek için Tukey Testi yapılmıştır. Nitel veriler için ise içerik analizi yapılmıştır.

Bulgular: Hem nitel hem de nicel verilerin analizi sonucunda katılımcıların okulların değerlere göre yönetilme durumlarına ilişkin olumlu algılara sahip olduğu bulgulanmıştır. Bununla birlikte cinsiyet, yaş, okul kademesi, okul türü, okul bölgesi ve görev türü değişkenlerine göre gruplar arasında anlamlı fark tespit edilmemiştir. Kıdem değişkeninin 1-5 yıl ile 11-15 yıl çalışma deneyimine sahip grupları arasında anlamlı fark bulunmuştur.

Önemli Vurgular: Araştırmadan elde edilen verilere ve ayrıca literatür taramasına göre öğretmen ve yöneticilerin okulların değerlere göre yönetildiğiyle ilgili olumlu algıları olduğu sonucuna ulaşılmıştır. Araştırmaya dayanarak önemli bir ihtiyaç olmasından dolayı yöneticilerin yetiştirilmesi için programlar düzenlenmelidir.

[1]This article is adapted from the researcher's master thesis.

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INTRODUCTION

Throughout human history, both individuals and small communities such as families have had to come together with other individuals and communities to form new and larger masses. Due to their relations with each other, a number of phenomena have emerged that keep these communities together. These phenomena have turned into a process of developing a common culture that shapes communities over time. This process, also known as socialization, takes place when individuals assimilate the culture of the society in which they live (Fichter, 2002). In the process of socialization, which is defined by Macionis (2005) as a lifelong phenomenon in which members of society develop their potential to become individuals and learn the culture of the society in which they live, individuals become a member of society through dynamics such as mass media, family, friend group and school.

The individuals who make up the society shape the culture, which is the traditional pattern of thoughts, actions and artifacts (Brown, 1991) passed down from generation to generation. While societies formed by individuals through a common culture differ from other societies, they are also divided into smaller groups called organizations, which have some differences within themselves. These organizations are established for many purposes such as meeting the needs, developing, progressing, solving problems and improve living conditions (Yılmaz, 2007). Most of the time, achieving socially determined goals is beyond the power of individuals. Therefore, achieving a goal that needs a common effort requires more than one person to join forces (Aydın, 1998). This fact shows the inevitable side of organization that requires gathering around goals.

One of the most important elements shaping characteristics of an organization is its values. Values are the most important elements that shape culture together with beliefs, symbols, language and norms. Value is a concept put forward by Thomas and Znaniecki in the field of sociology and has rooted from the Latin root *"valere"* meaning "to be valuable" or "to be strong" and used for things that are useful, desirable and valuable for the individual or social organization (Yılmaz, 2006). Philosophically, values belong to the field of axiology, which is called the philosophy of value, and express the principles on which people's behavior is based (Yılmaz, 2018). They can be evaluated as positive and negative, relative and definite, subjective and objective (Bolay, 1996). In the field of psychology, values are individual and defined as cognitive structures that show what is right or wrong and what is prioritized in the decision making process (Oyserman, 2015). In the field of management, which is also the subject of our research in a way, values are seen as managerial tools which show that how the practices of the organizations that individuals come together for certain purposes and form should be done (Şişman, 2002).

Values referred in the field of management are organizational values shaped by individual and universal values. These values, together with norms and hypothesis, constitute the basic elements that make up the structure of an organization (Erdoğan, 2017). Organizations carry the values required from social culture to organizational field through their members in order to achieve their goals. They differentiate from the society and other organizations by adding the values they produce to the values and norms they receive from the society and form their cultural identity (Demirtaş & Ekmekyapar, 2012).

Management According to Values

The perception of management according to values is in the modern period category among the management phases that can be classified under three different categories as classical period, neo-classical period and modern period. Management can be summarized as all strategies that ensure the functioning of an organization in which actions are designed to create a structure (Yılmaz, 2019). As can be understood from this brief definition, human relation is the most important factor to be considered in the management of organizational structures whose main purpose and source is human. Hence, the key to achieving the goal in organizational structures is to act in line with the shared goal. In order to ensure this movement, the management should take into account dynamics which are very important for the individual such as values, because values are effective in determining organizational goals, policies and strategies at both individual level and organizational level (Vurgun & Öztop, 2011).

Hodgkinson argues that the most important function of values is to guide behavior in various situations and to provide personal principles (as cited in Vurgun & Öztop, 2011). It is unthinkable for a management approach to be detached from these dynamics that shape personal principles and guide the behavior of individuals. Therefore, employees' loyalty to the possessed organizational values is important in terms of achieving and sustaining organizational goals. Actually, 'the creation of an organization takes place through the production and glorification of values, and its destruction takes place through the erosion and consumption of the created values' (Vurgun & Öztop, 2011).

Administrative tools are used in practices in organizational structures. Common values created by the organization can also

be shown among managerial tools. These dynamics, which can be called organizational values, constitute the source of the criteria used to qualify, evaluate and judge the behaviors of employees (Şişman, 2002).

Since values reflect the common goals, ideals and standards of the organizational structure, they are accepted as an appropriate criterion for solving problems (Şişman, 2002). Therefore, a management shaped according to values is considered to be an effective method in problem solving as it acts according to common values in both official organizations such as schools and personal organizations such as factories.

According to Wiener, three basic features are required for an organizational value system to besustained:

1. Ensuring the readiness of new members to adapt to the organizational culture,
2. Transferring the established common organizational values to new members,
3. Maintaining and supporting the existing organizational structure (Wiener, 1988).

As it can be understood from these characteristics, it is possible to say that values are effective in the creation and sustainability of the organizational structure.

Management according to values means managing this structure according to values by aiming to maximize the performance of the members of the organizational structure. Therefore, this management style is a method that aims to motivate individuals, develop their abilities, and encourage cooperation and innovation. According to this approach, which emphasizes a common effort, management according to values has four principles for the creation and protection of the organizational structure (Institue of Value Management, 2001):

1. Strengthening the common values of the organization.
2. Encouraging functional thinking.
3. Supporting a holistic structural approach.
4. Eliminating complexity and ambiguity.

The realization of these four principles is based on four different dynamics: *a participative management style*, *encouraging positive behavior, addressing the internal and external environment together*, and *using tried and tested methods and tools* (Institute of Value Management, 2001).

Management Process According to Values

There are some stages in the process of making management according to values operational and sustainable. Organizational structures determine their value judgments parallel to the needs shaped according to the characteristics of the society in which they exist and try to ensure that these values are adopted by their members. Individuals who can internalize organizational values turn thesevalues into a lifestyle and reflect them to their daily actions.

Blanchard and O'connor have listed three stages for the process of the management by values:

Stage 1: Identification of values.

Values should be clear, understandable and compatible with the vision of the organization. They should be determined in cooperation with the members rather than being determined on an individual basis and imposed on the members of the organization, because the absolute authority in value-basedmanagement is not individual but value-based management itself. Blanchard and O'connor list the issues to be considered in determining values as follows:

- Approval of the administration of the organization.
- Consulting with the board of directors.
- Consulting with the employees.
- Consulting with the other stakeholders.
- Synthesizing and presenting the process to the board of directors.

As seen in the first stage, values are determined according to needs and adopted by all actors of the organizational structure with a common view.

Stage 2: Defining values.

At this stage, necessary explanations are made to ensure that the values determined are clear and comprehensible for all stakeholders. It is necessary to specify the details of what kind of equivalents the concept may have by other actors

instead of specifying it with a single concept. According to Blanchard and O'Connor, the following details should be given for an organization that adopts the value of *morality* as a principle:

- To carry out the work honestly in all areas,
- To treat employees fairly and honestly,
- To treat other stakeholders fairly and honestly,
- To lead the society and make values operational.

With these elaborations, the values determined separately for all stakeholders become clearer andmore understandable.

Stage 3: Integration of values.

This stage is related to whether the organization behaves according to the determined values or not. At this stage, it is aimed to ensure compatibility between what should be and the current situation on the basis of organizational values. In case of incompatibility, human-oriented solutions are applied and the problem is tried to be solved. As individuals internalize organizational values, less incompatibility is experienced. Nevertheless, ordinary people can achieve extraordinary success when they meet in common values and act in harmony (Blanchard & O'connor, 1998).

In summary, management by values is a management approach in which the management of the organizational structure is designed according to the values of individuals. The values mentioned here are the common values that are shaped by individual values and are valid for everyone in achieving the common goals of the organization. Since common values are shaped by individual values, it is vital for the organization that the manager is flexible in adapting to changing value judgments and develops a management understanding that will lead to success in line with the goals in the organizational structure (Vurgun & Öztop, 2011).

The Place of Values in Education Management

Although the members of the organizational structure in a society have different beliefs, principles, thoughts and feelings individually, they have some common characteristics that they meet at a common ground at the organizational level. The most important dynamic of this common ground is the organizational values adopted by the members. In this sense, organizational structures, just like people, have value judgments and a value system formed by these value judgments (Yılmaz, 2019). Therefore, while organizational structures base the values of individuals from the society in which they exist, they also adopt the value judgments of that same society.

It is unthinkable for managers who manage the organizational structure to act detached from value judgments in the practices related to management, because values are one of the most important factors that determine the decisions and behavior of managers, though they are not the only dynamic (Aydın, 2001).

The values' importance had been ignored in the educational area as well as in management in researches conducted from a positivist perspective for a long time. However, although many fields such as education, economics, behavioral sciences, management, sociology, theology and philosophy have different approaches to values, there is a consensus on the importance of values (Fischhoff, 2002).

The value judgments of the society affect the education system to a great extent (Ataklı, 1999). Therefore, according to new leadership theories (Keçecioğlu, 2003), which give importance to emotions and values in contrast to traditional theories, it is foreseen that school management under the influence of the value judgments of the society should adopt a management approach based on values. In addition, in accordance with the Basic Law of National Education, the fact that schools, which aim to *"raise individuals who adopt moral and spiritual values and who have a balanced and healthily developed personality and character in terms of body, mind, morality, spirit and emotion"* and which are the most important actors ensuring the continuity of society, are institutions that transmit values makes it necessary for the administration to attach importance to values (Çelik, 2004).

It is possible to express the purpose of this study, which was conducted to determine the perceptions of administrators and teachers regarding the situation of schools being managed according to values, as "analyzing the perceptions of administrators and teachers regarding the situation of schools being managed according to values". In line with this main purpose, the following sub-objectives have been determined. The first two sub-goals were determined for the quantitative findings of the research, and the other sub-goals were determined for the qualitative findings.

1. What is the perception of administrators and teachers regarding the state of schools being managed according to values?

2. Is there a significant difference between gender (2.a.), age (2.b.), seniority (2.c.), grade (2.d.), school type (2.d.).) school region (2.e.) and profession type (2.f.) variables based on the participants' perception regarding whether schools are managed according to values or not?

3. How do administrators and teachers interpret the management by values?

4. What are the effects of values on social processes in schools?

5. What do the participants think about the differences between management by values and classical management?

6. According to the participants, to what extent do managers follow the principles of management by values?

METHODS AND MATERIALS

Research Model

This study was carried out in a mixed-method design. Mixed method studies are defined as using qualitative and quantitative research methods together in a study (Creswell, 2003). Thanks to the mixed method, if one dimension is weak in the research, it can be supported by the other dimension and thus the possibility of getting more comprehensive and clear answers to the research questions can be increased. In addition, in complex and large-scale studies, it is important in terms of increasing the possibility of recognizing views that may be overlooked with a single method (Johnson & Onwuegbuzie, 2004).

This is a descriptive research in its quantitative dimension since the research aims to ensure that the current situation is seen as it is. Descriptive research designs aim to evaluate events and situations in detail by answering what and how questions. This research design responds to questions that can form the basis for explanatory research by providing in-depth information on any subject (de Vaus, 2001). Therefore, descriptive researches can be effective in developing policies to solve problems in the future since they provide the determination of the current situation (Başol, 2008).

Phenomenological design was used in the qualitative dimension of the study. Phenomenological research design is a research technique that tries to explain how people evaluate the events and phenomena happening in their environment and how people interpret their environment (Wade & Tavris, 1990).

Universe and Sample

The population of the study 1 consists of 3338 administrators and teachers working in public and private primary, secondary and high schools in Kızıltepe district of Mardin province in the 2021-2022 academic year.

In order to obtain the quantitative dimension data, convenience sampling technique, which is one of the random sampling methods, was used in the sample formation. Randomness defines that all units have an equal chance of selection in sample formation (Büyüköztürk et al., 2018). The reason for choosing this technique is to save time and the fact that it is more difficult to reach the participants and health risks, etc during the Covid-19 pandemic period. In addition, in order to make the accessibility easier, the link, which was obtained after transferring the scale to the internet environment, was sent to the contact groups of the schools through the district directorate of national education and by official letter, and possible difficulties and problems that can be faced in reaching one by one were prevented.

Regarding the sample adequacy, the number of 300 participants determined by Tabachnick and Fidell (2007) for sample adequacy was taken as a basis. According to this criterion, a sample size of 340 participants was considered sufficient. There are totally 340 participants that 89 of them are from primary school, 150 of them are from secondary school and 101 of them are from high school.

Table 1: Demographic Data on Quantitative Dimension

Variables		N	%
Gender	Female	111	32,6
	Male	229	67,4
Total		340	100.0
	21-30 yrs old	78	22,9
Age	31-40 yrs old	183	53,8
	41 yrs old and over	79	23,2
Total		340	100.0
	1-5 yrs	79	23,2
Seniority	6-10 yrs	114	33,5
	11-15 yrs	76	22,4
	16 yrs and over	71	20,9

Total		340	100.0
	Primary	89	26,2
Grade	Secondary	150	44,1
	High School	101	29,7
Total		340	100.0
School Type	State School	282	82,9
	Private School	58	17,1
Total		340	100.0
School Region	Village	51	15,0
	City Center	289	85,0
Total		340	100.0
Profession Type	Teacher	286	84,1
	Administrator	54	15,9
Total		340	100.0

When Table 1 is evaluated, it can be seen that 111 (32.6%) of the participants are female and 229 (67.4%) are male according to the gender variable; 78 (22.9%) of the participants are between the ages of 21-30, 183 (53.8%) are between the ages of 31-40 and 79 (23.2%) are aged 41 and over according to the age variable; 79 (23.2%) have 1-5 years, 114 (33.5%) have 6-10 years, 76 (22.4%) have 11-15 years and 71 (20.9%) have 16 years or more experience in terms of seniority variable; 89 (26.2%) of the participants work in primary school, 150 (44.1%) of the participants work in secondary school and 101 (29.7%) of the participants work in high school in grade variable. It can be seen that 282 (82.9%) of the participants work in public schools and 58 (17.1%) of them work in private schools in school type variable; 51 (15%) of them work in village schools and 289 (85%) of them work in schools in the city center in school region variable. Looking at the profession type variable, it is seen that 286 (84.1%) of them work as teachers and 54 (15.9%) of them work as administrators.

Study Group

For the qualitative dimension study group, maximum diversity technique was used. The maximum diversity technique belongs to the purposeful sampling category of non-random sampling methods. This technique aims to maximize the variety of individuals who can be a party to the problem (Büyüköztürk, et al., 2018). As such, the study group consists of a total of 20 participants (10 teachers and 10 administrators). Considering that the selected participants would provide the most appropriate information, the maximum diversity technique was preferred in determining the study group. For this purpose, the participants were selected to meet different gender, age, seniority, grade, school type, and school region and profession type according to the variable types. As a requirement of this technique, a potential study group of thirty-two people who were predetermined according to the variables of our study were contacted. As a result of the interview, some individuals in this group did not accept to participate in the study. A sample of twenty people was obtained from the remaining part of the group to cover all variables. In order for the interviews to be conducted in accordance with the confidentiality principle teachers were coded as *T1, T2, T3, T4, T5, T6, S7, T8, T9* and *T10* and administrators were coded as *A1, A2, A3, A4, A5, A6, A7, A8, A9* and *A10.*

Table 2: Statistics Related to the Study Group

Pts. Code	G.	Age	Snr. (yr)	Grade	School Type	School Region	Prof. Type
A1	F	39	11	Sec. Sch.	State	Village	Asst. Mgr.
A2	M	31	6	H. Sch.	Private	City Cent.	Asst. Mgr.
A3	F	44	18	Pri. Sch.	State	City Cent.	Asst. Mgr.
A4	M	41	17	H. Sch.	State	City Cent.	Mgr.
A5	M	44	17	Sec. Sch.	State	Village	Asst. Mgr.
A6	M	38	13	H. Sch.	Private	City Cent.	Asst. Mgr.
A7	M	33	7	H. Sch.	State	City Cent.	Asst. Mgr.
A8	M	46	19	Pri. Sch.	State	Village	Mgr.
A9	F	42	16	Sec. Sch.	State	City Cent.	Asst. Mgr.

A10	M	30	7	Pri. Sch.	State	City Cent.	Asst. Mgr.
T1	F	23	2	H. Sch.	State	City Cent.	Teacher
T2	M	34	12	Sec. Sch.	State	Village	Teacher
T3	M	29	5	Pri. Sch.	State	City Cent.	Teacher
T4	F	29	4	Sec. Sch.	State	Village	Teacher
T5	M	41	16	H. Sch.	Private	City Cent.	Teacher
T6	M	28	4	Pri. Sch.	State	City Cent.	Teacher
T7	F	35	8	H. Sch.	Private	Village	Teacher
T8	F	45	19	Sec. Sch.	State	City Cent.	Teacher
T9	M	38	14	Pri. Sch.	State	Village	Teacher
T10	M	30	6	H. Sch.	State	City Cent.	Teacher

When Table 2 is evaluated, it can be seen that 7 of the participants are female and 13 are male in terms of gender variable; that 6 of them are 21-30, 7 of them are 31-40 and 7 of them are 41 and over in age variable; that 4 of them have 1-5, 5 of them have 6-10, 4 of them have between 11-15 years and 7 of them have 16 years or more experience in the seniority variable; that 6 of them work in primary school, 6 of them work in secondary school and 8 of them work in high school in the grade variable. When we look at the type of school, we can see that 16 of them work in public schools and 4 of them work in private schools and at the school region, we can see that 7 of them work in village schools and 13 in schools in the city centre. Looking at the profession type, it is seen that 10 of them work as teachers and 10 of them work as administrators.

Data Collection Tools

The "A Scale for Management by Values "(APPENDIX-1), which was used in the quantitative part of the research and created by Yılmaz (2006), consists of 25 Likert type items aimed at identifying the perception of administrators and teachers about the school administrators' managing schools according to values. The scale is one-dimensional and the variance explained by this single dimension was measured as 40%. The factors' load values of the items in the scale are between 0.36 and 0.87. The Cronbach Alpha Reliability Coefficient of the scale was measured as α=.957 and therefore it can be said that it has a reliable value. The Cronbach Alpha Reliability Coefficient of the scale in this study was also found to be α=.957. According to these values, the scale is reliable. According to the arithmetic mean of the statements in the scale, values between 1.00-1.79 are classified as "*I highly disagree (very low valu*e)", values between 1.80-2.59 are classified as *"I slightly disagree (low value)"*, values between 2.60-3.39 are classified as *"Moderately agree (moderate value)"*, values between 3.40-4.19 are classified as *"I highly agree (high value)"* and values between 4.20-5.00 were classified as *"I completely agree (very high value)"* totally in five options. The higher the score obtained from the scale means the higher participants' perception of being managed by values in the institutions they work is. Low scores mean that this perception is weak. Therefore, there is a parallelism between score and perception (Yılmaz, 2006).

In the comparison been made based on the Skewness and Kurtosis value ranges of -3 and +3 (Terzi, 2019, p:16/121) to measure the assumption of normal distribution of dependent and independent variables, it is seen that all variables are within this range and therefore the data shows a normal distribution. For Skewness, these values are -,674 for gender variable, -,008 for age variable, -,638 for seniority variable, -,617 for grade variable, -,407 for school type variable, -,684 for school region variable and -,855 for profession type variable. Kurtosis values of the variables are as follows: gendervariable -,119; age variable -,155; seniority variable -,199; grade variable -,787; school type variable -,317; school region variable -,16 and profession type variable -,431.

Qualitative Data Collection Tool

For the qualitative part of the study, a semi-structured interview form (APPENDIX-2) including of six open-ended questions created by the researcher was applied. After analyzing the researches on the subject and reviewing the literature, a question pool of ten was created. The questions in the question pool were examined by three experts to determine the content validity of them. After the number of questions was decreased to six according to the feedback from the experts, they were transformed into a semi-structured form. The first part of the form, which consists of two parts, includes the demographic data of the participants and the second part includes the interview questions.

Data Collection and Analysis

Since the data collection studies of the research coincided with a period when the Covid-19 pandemic was effective, online communication tools were used in both ways of the data collection.

The scale used for the quantitative dimension was transferred to Google Forms and the link created was transmitted to the school contact groups of the administrators and teachers in the population of our study through the district directorate of national education via WhatsApp application. The process was followed from the site where the scale was transferred, and it was deactivated when the number of participants reached 340, which is the sample number.

The data collected in the quantitative dimension were analyzed using the SPSS program. The Kolmogorov-Smirnov test was applied for the normality test. As a result of the test, *a p* value greater than *a*=.05 means that there is a normal score distribution (Büyüköztürk, 2019). After the percentage, mean, standard deviation and item distribution tests, T-Test was used for the variables of gender, profession type, school region and school type and ANOVA was used for the variables of age, seniority and the grade they worked with. Tukey Test, one of the Post Hoc tests, was applied to specify the source of the significant values between the variables.

Phenomenological design was applied in the qualitative dimension of the research. In order to apply this design, an interview was conducted with a semi-structured form and via online communication applications. The interview was taken in written form and a categorical content analysis was carried out by coding method by reading it repeatedly. Categorical analysis, in general, is the division of the data into units and then grouping these units into categories according to predetermined criteria (Tavşancıl & Aslan, 2001: 90).

FINDINGS and COMMENTS

In this part of the research, the findings gathered as a result of statistical analyses of the data collected in line with the aims of the research are given.

Quantitative Findings

Table 3: Analysis of Findings Regarding the Management of Schools by Values

All participants	*N*	*X*	*SS*	*t-value*
Total	340	3.775	,876	-1,834

By evaluating Table 3, it is seen that the mean value of the participants' perceptions about the situation of schools being managed according to values is high at the level of "*highly agree"* (X=3.77). Therefore, it is seen that there is a positive perception about schools being managed accordingto values.

Findings Related to the Second Sub-Objective

The findings related to the second sub-objective of the study, *"Is there a significant difference between the perceptions of administrators and teachers (participants) about the management of schools according to values regarding variables of gender (2.a.), age (2.b.), seniority (2.c.), grade (2.ç.), school type (2.d.), school region (2.e.)* and *profession type (2.f.)?"* are given under separate headings for each independent variable.

Findings on the Management of Schools According to Values Regarding Gender Variable

The findings of the analyses about the gender variable are shown in Table 4.

Table 4: Analysis of Findings Regarding Gender Variable

Gender	*N*	*X*	*SS*	*t-value*	*p*
Woman	111	3,6877	,82660		
Male	229	3,7085	,86323	-,212	,833
Total	340	3,6981	,84491		

p> .05

By evaluating Table 4, it is seen that women (x=3.68) and men (x=3.70) have high values with averages in the arithmetic mean of participant perceptions according to gender variable. It is also seen that the mean perceptions of women and men are close to each other. According to the statistics of the unrelated group T-test, there is no significant difference between the perceptions of participants related to their gender (p>.05).

When the findings are analyzed, it is seen that both female and male participants' views on the situation of schools being managed according to values are at a high level and positive. In addition, it is seen that gender variable does not make a significant difference between participants' thoughts.

Findings on the Management of Schools According to Values Regarding Age Variable

The findings of the analyses about the age variable are shown in Table 5.

Table 5: **Analysis of Findings Regarding Age Variable**

Age	N	X	SS	F	p
21-30 yrs old	78	3,8636	,87566		
31-40 yrs old	183	3,6481	,78289	1,856	,158
41 yrs old and over	79	3,6661	,95960		
Total	340	3,7017	,85028		

p> .05

By evaluating Table 5, it is seen that the arithmetic mean of the participants' perceptions according to the age variable is (x=3.86) for participants aged 21-30, (x=3.64) for participants aged 31-40 and (x=3.66) for participants aged 41 and over. In addition, it is seen that the mean perceptions of the participants are close to each other according to the age variable. According to the one-way analysis of variance (ANOVA) test, there is no significant difference between the participants' perceptions (p>.05).

According to these findings obtained related to the age variable, it is seen that the arithmetic mean (x=3.70) of the opinions of the participants regarding the management of schools according to values is at a high level and positive. In addition, it is seen that the participants of different ages have similar opinions. Findings on the management of schools according to values regarding seniority variable

The findings of the analyses about the seniority variable are shown in Table 6.

Table 6: **Analysis of Findings Regarding the Seniority Variable**

Seniority	*N*	*X*	*SS*	*F*	*p*	*AF*
b/w 1-5 yrs	79	3,9097	,82746	2,918	,034	1st-3rd Group
b/w 6-10 yrs	114	3,6405	,80183			
b/w 11-15 yrs	76	3,5313	,90374			
16 yrs and over	71	3,7508	,85819			
Total	340	3,7017	,85028			

p> .05

By evaluating Table 6, it is seen that the arithmetic mean of the participants' perceptions according to the seniority variable is (x=3.90) for the participants with 1-5 years of experience, (x=3.64) for the participants with 6-10 years of experience, (x=3.64) for the participants with 11-15 years of experience, (x=3.53) for the participants with 11-15 years of experience, and (x=3.75) for the participants with 16 years of experience and over. It has been identified that there is a significant difference in perception levels between the groups determined according to the seniority variable and Tukey HSD test has been applied to determine which groups this difference is between. As a result of the test, it has been seen that there is a significant difference between the groups with 1-5 years and 11-15 years of experience (p<.05). According to these findings, it can be said that participants with less experience have more positive perceptions about the management of schools according to values.

Findings on the Management of Schools According to Values Regarding Grade Variable

The findings of the analyses about the grade variable are shown in Table 7.

Table 7: **Analysis of Findings Regarding the Grade Variable**

Grade	*N*	*X*	*SS*	*F*	*p*
Primary Sch.	89	3,8573	,76691		
Sec. Sch.	150	3,5945	,89793	2,743	,066
High Sch.	101	3,7239	,83230		
Total	340	3,7017	,85028		

p> .05

By evaluating Table 7, it is seen that the arithmetic mean of the participants' perceptions according to the grade variable is (x=3.85) for the participants working in primary school, (x=3.59) for the participants working in secondary school and (x=3.72)

for the participants working in high school. In addition, it is seen that the mean perceptions of the participants are close according to the grade variable. According to the one-way analysis of variance (ANOVA) test, there was no significant difference between the participants' perceptions according to the grade variable (p>.05). According to these findings obtained according to the grade variable, it is seen that the arithmetic mean (x=3.70) of the participants' views on the situation of schools being managed according to values is highly positive. In addition, it is seen that individuals working at different grades have similar opinions.

Findings on the Management of Schools According to Values Regarding School Type Variable

The analysis findings related to the school type variable are shown in Table 8.

Table 8: **Analysis of Findings Regarding the School Type Variable**

Sch. Type	*N*	*X*	*SS*	*t-value*	*p*
State Sch.	282	3,7001	,85637		
Private Sch.	58	3,7096	,82725	-,077	,938
Total	340	3.7048	,84181		

p>.05

By evaluating Table 8, it is seen that the arithmetic mean of the participants' perceptions according to the school type variable is (x=3.70) for those working in public schools and (x=3.70) for those working in private schools. In addition, it is seen that the mean perception of the participants are close according to the school type variable. According to the unrelated group T-test statistics, there is no significant difference between the perceptions of the participants working in public and private schools (p>.05).

According to the findings obtained from the school type variable, it is seen that the arithmetic mean (x=3.70) of the participants' views on the situation of schools being managed according to values is highly positive. In addition, it is seen that individuals working in different school types have similar opinions.

Findings on the Management of Schools According to Values Related to School Region Variable

The findings of the analyses related to the school region variable are shown in Table 9.

Table 9: **Analysis of Findings Regarding the School Region Variable**

School Region	*N*	*X*	*SS*	*t-value*	*p*
Village	51	3,7178	,92238		
City Center	289	3,6989	,83860	,146	,884
Total	340	3.7083	,88049		

p>.05

By evaluating Table 9, it is seen that the arithmetic mean of the participants' perceptions according to the school region variable has a high value with the averages of those working in the village (x=3.71) and those working in the city centre (x=3.69). In addition, it is seen that the mean perceptions of the participants working in the village and those working in the city centre are close. According to the unrelated group T-test statistics, there is no significant difference between the perceptions of the participants working in the village and working in the city centre (p>.05).

According to these findings obtained according to the school region variable, it is seen that the arithmetic mean (x=3.70) of the perceptions of the participants regarding the management of schools according to values is highly positive. In addition, it has been observed that the opinions of individuals working in schools located in different regions are similar.

Findings Related to the Management of Schools According to Values Regarding the Type of Profession Variable

The findings of the analyses related to the profession type variable are shown in Table 10.

Table 10: **Analysis of Findings Regarding the Profession Type Variable**

Proff. Type	*N*	*X*	*SS*	*t-value*	*p*
Teacher	286	3,6651	,83300		
Admin.	54	3,8957	,92060	-1,834	,068
Total	340	3.7804	,87680		

p> .05

By evaluating Table 10, it is seen that teachers (x=3.66) and administrators (x=3.89) have high values in the arithmetic mean. In addition, it is seen that the perception averages of teachers and administrators are close to each other. According to the unrelated group T-test statistics, there is no significant difference between the perceptions of teachers and administrators (p>.05).

According to these findings obtained according to the type of profession variable, it is seen that the arithmetic mean (x=3.78) of the opinions of the participants regarding the management of schools according to values is highly positive. In addition, it has been determined that the opinions of individuals working as administrators or teachers are similar.

Qualitative Findings

In this section, the findings of the qualitative dimension of the research are presented. The questions in the interview form (*1-What does management by values mean to you?,* 2- *What is the place and importance of management by values in education?,* 3- *Do you think that managers have the values that they are supposed to have?, 4- What differences do you think there are between management by values and classical management?,* 5- *What is the role of values in school interaction?* and *6-What is the effect of values on the individual?*), the data were titled and classified into four main themes as *"1-Organizational Climate", 2- Perception of Classical Management", 3- Perception of Management by Values"* and *4- Current Situation"*. Findings related to the main themes are given separately.

Findings Related to the Third and Fourth Sub-Objective

The answers given to the questions *"How do administrators and teachers interpret values-basedmanagement?"* and *"What are the effects of values on social processes in schools?",* which were determined as the third and fourth sub-objectives of the research, are titled as the theme of organizational climate since they are related to communication, interaction and relations between members within the organization.

Findings Related to the Organizational Climate Theme

The findings related to the organizational climate theme are given in Figure 1.

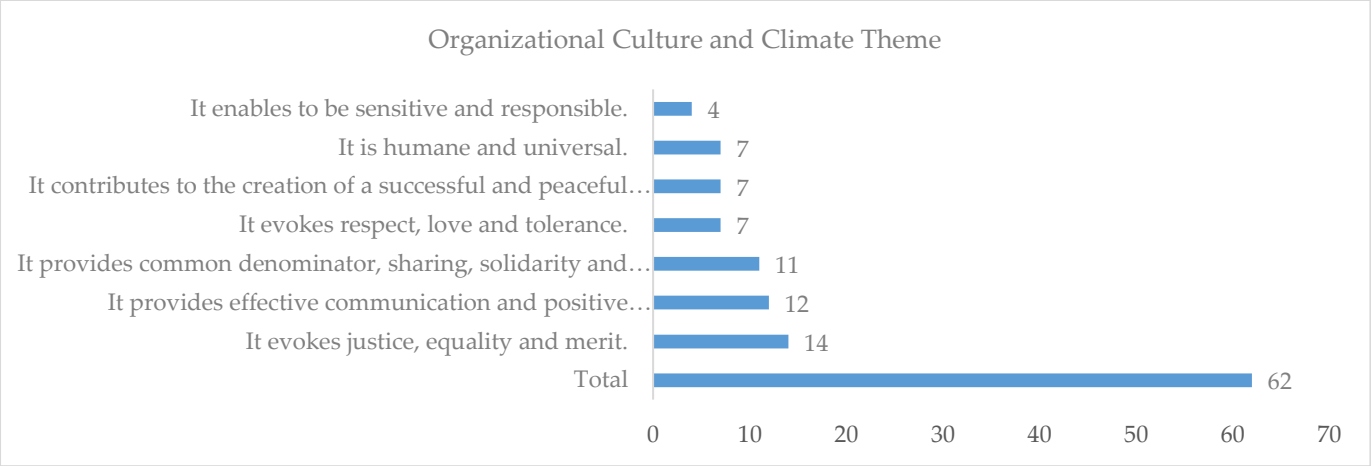

Figure 1: **Organizational Culture and Climate Theme**

When Figure 1 is evaluated, it is seen that the highest frequency (f=14) of the answers given by the participants is gathered in the sub-theme of *"Justice, equality and merit"*. The other sub-themes are; *"Provides effective and positive communication*" (f=12), *"Provides common dominator, sharing, solidarity and cooperation"* (f=11), *"Evokes respect, love and tolerance"* (f=7), *"Humane and universal"* (f=7), *"Contributes to the formation of a successful and peaceful environment"* (f=7) and *"Enables you to be sensitive and responsible"* (f=4).

When the opinions of school administrators and teachers are analyzed, the participant coded A4 expresses his/her opinion in relation to the sub-theme of "J*ustice, equality and merit"* as *"It is the management of the school according to our core values such as justice, respect, love, equality, sharing."* Similarly, the participant coded A7 emphasizes that the core values are justice, equality, love and respect by saying *"It refers to management by taking into account the values of justice, equality, tolerance, love, respect, solidarity, etc."*. The participant coded A9 associates values with school life by expressing the situation as follows by emphasizing the function of them at school: *"Since values are effective in factors that increase communication and interaction such as understanding, love, compassion, fairness, justice and respect towards each other, I think that if they are available in the school, they will contribute positively to the school climate"*.

As can be seen in the direct quotations above, it is possible to say that the participants' views on management by values can be evaluated as expressions based on "*justice, equality and merit*". Nevertheless, as can be seen in Figure 1, most of the participants (N=14) have stated that management by values evoked justice, equality and merit. Therefore, it can be said that the participants think that there should be an equitable management within the organizational structure.

When the data collected from the participants' responses is evaluated, the participant coded A1 stated *"Adoption of values by administrators enables them to communicate more effectively with all people in education.*" related to the sub-theme *"Provides healthy/effective communication"*; similarly, the participant coded A3 stated that *"Management according to values enables positive communication in the school climate and culture, more objective and culturally compatible approaches to problems and solutions to problems."*; while the participant coded A8 supported these views and stated that *"I think that values have a positive effect on the process of communication in the school."*. When we examine the literature, it can be concluded that intra-organizational communication is very important for an organization to be successful. Hence, as seen in the direct quotations, some of the participants stated that values-based management provides a healthy and effective communication within the organization.

When the participants' opinions are evaluated, the participant coded A4 stated that *"I think that common values such as respect, justice and sharing directly affect the individual's philosophy of life and direct him/her to a certain position socially*" related to the sub-theme of "*It provides common ground, sharing, solidarity and cooperation"*, which shows the relationship between members within the organizational structure; while the participant coded A9 stated that *"If we elaborate the values a little bit, I understand them as a framework of concepts that take into account the climate of the school, which includes transparent, effective participatory, sharing, democratic, love and respect*". In addition, the participant coded T5 stated that "*Management by values tries to reach a final result by sharing all the positive or negative results of the decision-making processes, relations, and the emerging situation within the management or by management stakeholders.*"

As can be seen, the participants stated that management by values provides a common ground and solidarity. Nonetheless, one of the most important elements that keeps organizational structures together is to be in coordination. The most important element that ensures coordination is common values.

When the participant's views are evaluated, the participant with the code A1 stated that, "*Management according to values fulfills the managerial responsibilities towards the other person with respect and love regardless of race, religion, language, age, gender, ethos.*" related to the sub-theme "*It evokes respect, love and tolerance*". Supporting this view, the participant with the code T4 stated that "*Concepts such as peace, respect, love, responsibility, happiness, cooperation, honesty, humility, tolerance, sincerity, harmony and freedom are the basic values that should be adopted universally*". The participant with the code A7 shared a similar view by stating "*Justice, equality, tolerance, love, respect, solidarity, etc. all express the management by values*.". Value-based management approach prioritizes respect for the individual. Nevertheless, as it can be seen from the direct quotations, the participants stated that values and management evoke respect, love and tolerance.

Regarding the sub-theme, on which the participants expressed their opinion as "*It is humane and universal*.", the participant with the code A1 stated that, "*Concepts such as peace, respect, love, responsibility, happiness, cooperation, honesty, humility, tolerance, sincerity, harmony and freedom are to be universally adopted values*." while the participant T3 emphasized the universal side of the values and stated that, "*When we look at the role of values in the interaction at school, an opportunity is offered at the point of establishing an equal level of dialogue since a system is tried to be established especially on the basis of universal values.*" Furthermore, the participant with the code T5 expressed the human side of the values by stating, "*Managing by values has an important function that will improve the attitude of the stakeholders who involve in education, namely, improve the relations between the student-parent-teacher and the administration, by ensuring that the achievements of the education are based on the most humane foundations.*". As can be seen from the direct quotations, the participants expressed that the perception of management by values has a universal and humane side. Thus, values have a universal dimension as well as an individual and organizational one.

When the participant's views are analyzed, the participant with code A2 said, "*Educational climates dominated by concepts such as justice, equality and in which the responsibilities are shared by the members and which have positive interaction always lead to successful and creative generations*." related to the sub-theme "*It contributes to the creation of a successful and peaceful environment.*" while the participant A3 pointed out the success by stating that, "*As values and management will rise the sense of belonging of the society towards the school, it will also retaliate the demands of the society and it will be inevitable for the school to raise individuals who are beneficial to the society and achieve success*.". The participant with the code T6 emphasized peace and said, "*An individual who is compatible with the values of the society contributes to the peace of both himself and the society*".

When the views are evaluated, while the participant with the code A1 said that, "*Values enable individuals to be responsive towards all the problems we face in life, to understand the causes of the problems and to find solutions to these problems with a willing desire.*" regarding the sub-theme of "*It enables to be sensitive and responsible*", the participant with the code T5 stated his opinion, "*Values enable an individual to develop a sense of social identity, to feel himself as a valuable and important part of the society, to feel as an individual sensitive to social problems, without gender discrimination, and respectful to differences.*". The participant with the code T7 mentioned the benefits of management according to values and said, "*First, the relationship in the school is nourished by values, the most important focus of education is the student's sense of belonging of the school, the fulfillment of the school's tasks and responsibilities, the prevention of peer bullying, the boosting relations with refugee peers in recent years. Values play an important role in gaining these actions*".

As seen in the direct quotations, qualities such as a peaceful environment that appeals to emotions and being sensitive are among the views expressed by the participants. According to the participants, it is more likely to be successful in such environments.

Findings Related to the Fifth Sub-Objective

The answers to the question *"What differences do the participants think are there between management by values and classical management?",* which was determined as the fifth sub-objective of the research, were classified into two main themes as classical management and management by values since they are related to the difference between classical management and management by values.

Findings Related to the Theme of Classical Management Perception

Findings related to the theme of classical management perception are given in Figure 2.

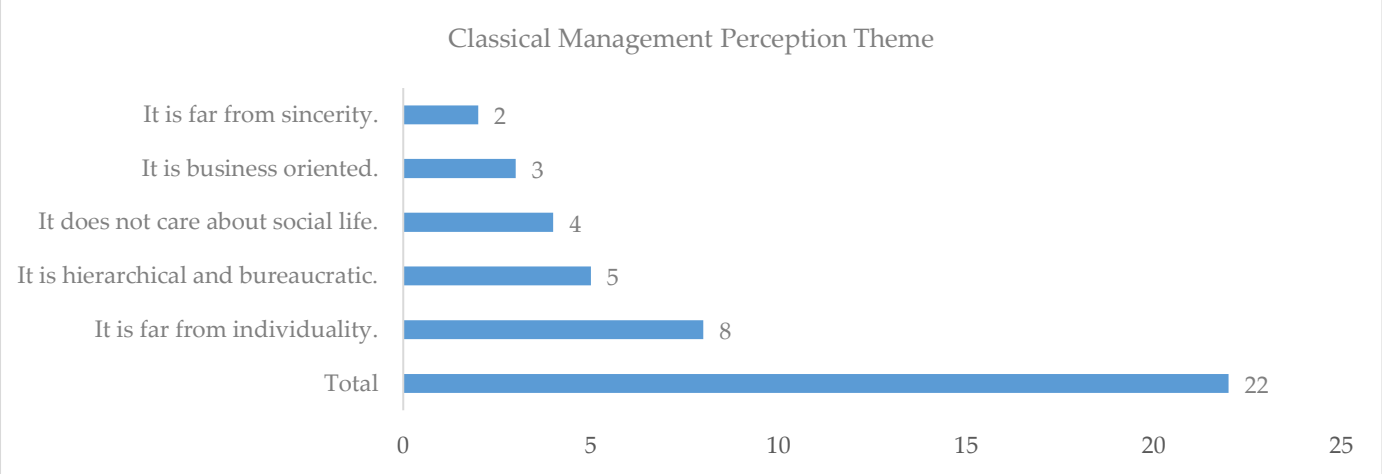

Figure 2: Classical Management Perception Theme

When Figure 2 is evaluated, it is seen that the highest frequency (f=8) of the participants' answers to the question *"5- What differences do the participants think there are between management by values and classical management?"* is gathered in the sub-theme *"It is far from individuality"*. The other sub-themes are respectively; *"It is hierarchical and bureaucratic"* (f=5); *"It does not consider social life"* (f=4); *"It is business oriented*" (f=3) and *"It is far from sincerity*" (f=2).

When the views are evaluated, while the participant with the code A9 said, "*Classic management which includes the mentality of just doing the tasks without considering if the officer suffers, not taking into account the characteristics and abilities of the individual, reaching the goal of the work to be done being at the forefront, not considering the moral satisfaction, not knowing and even ignoring the attitudes of the person has of course a difference with the management which have administrators managing by values*" regarding the sub-theme "*It is far from individuality*", the participant with the code A10 said, "*While the expectations, wishes and desires of the individual are taken into account in the management by values, there is only the structuring of education within certain stereotypes in the classical method.*". Furthermore, participant coded as T3, expressed an opinion on this subject as "*In classical management, all individuals are expected to be the same and differences are not tolerated and they separate the different ones.*". As it is seen, the participants think that the classical management approach ignores the individual and it is result-oriented. Thus, classical management focuses on outputs.

According to the participants' views, while the participant with the code A1 said, "*A hierarchical order is used in classical management. In other words, there is a task to be done and this task needs to be handled in the chain of command, and the task*

precedes the individuals.” related to the sub-theme "*It is hierarchical and bureaucratic*"; The participant with the code A2 also stated that, "*As in all fields, also in education, administrators often cannot go beyond the role assigned to them by the hierarchy*." Similarly, participant A4 expressed the hierarchical and bureaucratic side of the classical management approach by saying that "*Classical management approach is quite different from management by values, since it is a bureaucratic and authoritarian management style*".

According to the opinions of the participants, the participant coded A3 stated that *"The classical management system separates the school and the society and does not aim to integrate with the social structure",* while the participant coded A4 stated that *"In classical management, the employee is always dependent on the school and there is the idea that all kinds of work and sanctions can be done at any time, more precisely, in layman's terms, the employee is only seen as a worker-employee rather than a social being"* related to the sub-theme *"It does not care about social life"*.

The participant coded A6 stated that *"In the classical management approach, the members of the organization are motivated by money and physical needs are met, the social aspect is not considered".* As can be understood from the direct quotations, the participants stated that the classical management approach ignores the private life of the individual and tries to carry out the process with a hierarchical and bureaucratic mentality.

According to the participant's views, the participant with the code A1 emphasized the result-oriented feature of classical management and said, "*A hierarchical order is used in classical management. In other words, there is a task to be done and this task needs to be handled in the chain of command, and the task precedes the individuals”* regarding the sub-theme "*It is business oriented*". Furthermore, the participant with the code A4 expressed his opinion that "*In the classical management mentality, the inner world of the employee is not considered, only the job is important and that job is required to be completed within a certain time period*" while the participant with the code A9 said, "*Classic management which includes the mentality of just doing the job without considering if the individual suffers, not taking into account the characteristics and abilities of the individual, reaching the goal of the work to be done being at the forefront, not considering the moral satisfaction, not knowing and even ignoring the attitudes of the person has of course a difference from the management which have administrators managing by values*" by expressing that the classical management approach focuses on work rather than people.

According to the participant's views, the participant with the code A1 said that, "*Concepts such as peace, respect, love, responsibility, happiness, cooperation, honesty, humility, tolerance, sincerity, harmony and freedom are the basic values that should be adopted universally. These values are not taken into account in the classical management approach.”* related to the sub-theme formed as "*It is far from sincerity.*" while the participant with the code T4 emphasized that the classical management carries out business and transactions with an insincere manner and it is completely output-oriented, by saying that "*Insincere secondary relations are more dominant in classical management.*" Therefore, the participants stated that in classical management, the possibility of organization members lacking a sense of belonging is high.

Findings Related to the Theme of Perception of Management by Values

Findings related to the theme of perception of management by values are given in Figure 3.

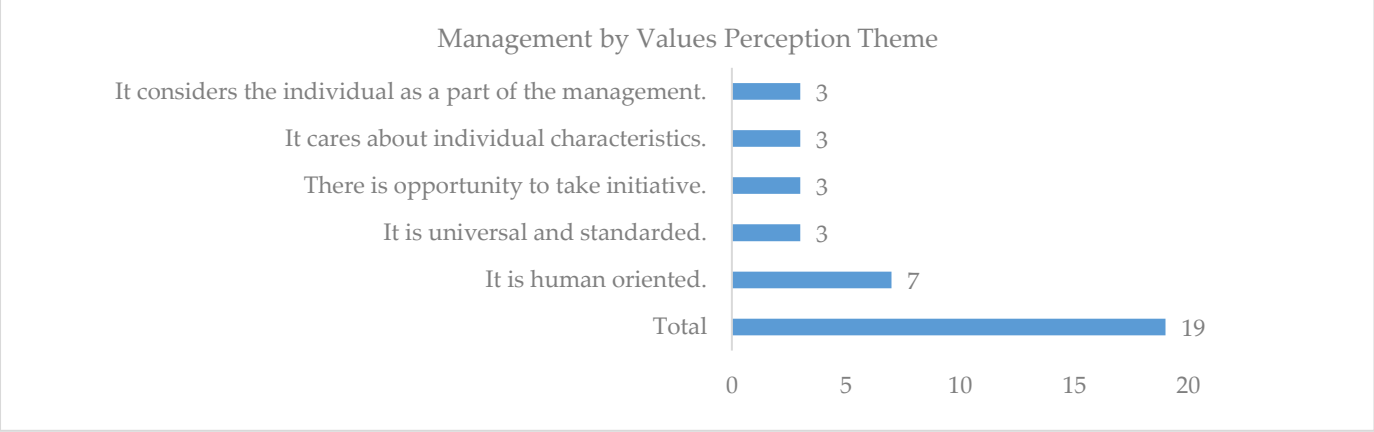

Figure 3: Perception of Management by Values Theme

When Figure 3 is evaluated, the participants' answers given to the question “7. *What kind of differences are there between management by values and classical management according to the participants?*” has the most frequency on the sub-theme “*It is human-oriented*” (f=7). The other sub-themes are respectively; “*It is universal and standard*” (f=3); “*There is opportunity to take initiative*” (f=3); "*It cares about individual characteristics*" (f=3) and "*It considers the individuals as a part of management*" (f=3).

When the views are evaluated, the participant with the code A1 emphasized the humane side of the management by values and said, "*In management by values, the human side is at the forefront and people precede work. To have value means to put people in a priority position";* related to the sub-theme "*It is human oriented*". The participant with the code T6 stated with a similar view, "*In management by values, on the contrary to classical management, the values of society and human come first*". Furthermore, the participant with the code T8, emphasized the humane side of the management by values as "*Management by values focuses on people, while classical management focuses on an ordinary success*". As can be seen in the direct quotations, the participants stated that, against the business-oriented style of classical management, management by values prioritizes human. Among the participants, the view that management by values focus on the individual rather than the output is dominant.

Regarding the sub-theme "*It is universal and standard*", which was created according to the participant's views, the participant with the code A1 stated that "*It is more important to enable students to acquire all the values that define a good person, which is a universal value, rather than stuffing their brain with knowledge*" while the participant with the code A2 expressed the following statement: "*The main difference must be this: no matter what conditions we have, we should act according to universally accepted facts rather than the benefits of the person or situation"*. The participant A4 also stated that "*I think the effects of especially universal values on human psychology and sociology are indisputable*".

Among the participants' views, participant coded as A2 emphasized the opportunity to take the initiative in management by values which breaks the influence of the bureaucracy of the administration and said that "*Taking initiative without seeing bureaucratic actions as an obstacle for the solution of problems can be considered as one of these differences*" related to the sub-theme "*There is opportunity to take initiative*". The participant with the code A9 similarly said, "*In a society which cares about the values, the individual is considered as important. An individual who feels valuable thinks freely, and who understands that he is loved, takes initiative bravely and becomes an entrepreneur"*. The participant with the code T10 stated that "*We have really passive executive staff in decision making and implementation*".

As can be seen from the quotations, the participants stated that management by values is a standard and has a universal aspect that can be accepted by all circles. Therefore, acting according to values enables the administrator to get rid of bureaucracy and to take the initiative in the decision phase.

When the participant opinions were analyzed, the participant with the code A9 said, "*In the administrations which have managers considering values, the members feel valuable first of all and are not exposed to discrimination*" related to the sub-theme" *It cares about individual characteristics*" while the participant with the code T10 said, "*In management by values, the expectations, wishes and desires of the individual are taken into account*". Similarly, the participant T7 emphasized the individual differences and said, "*In a management style that prioritizes values, it is ensured that educated, tolerant, helpful, forward-thinking and highly spiritual individuals are raised*".

When the participants' opinions were evaluated, the participant with the code A3 said, "*The classical management system separates the school and the society; On the other hand, since management by values will increase the sense of belonging of the society towards the school, it will also reply to the demands of the society and it will be inevitable for the school to raise individuals who are beneficial to the society and to achieve success*" related to the sub-category " *It considers the individuals as a part of management*". Similarly, the participant with the code T1 emphasized the sense of belonging and said, "*The most important difference is that in management by values, individuals feel themselves as a part of management*". Moreover, the participant T5 emphasized cooperation and said, "*Management by values tries to reach a final result by sharing all the positive or negative results of the decision-making processes, relations, and the situation within the management or among the stakeholders*".

As it can be seen from the quotations, it is understood that the participants think that values and management care about individual characteristics and see the individual as an integral part of the organization. Nevertheless, the individual should take an active part in management and individual differences should not be ignored in decision-making.

Findings Related to the Sixth Sub-Objective

The answers given to the question *"According to the participants, to what extent do the administrators have the principles of management by values?"* which was determined as the sixth sub-objective of the research, were titled as the current situation theme since it determineswhether the schools are managed according to values or not.

Findings Related to the Current Situation Theme

Findings related to the current situation theme are given in Figure 4.

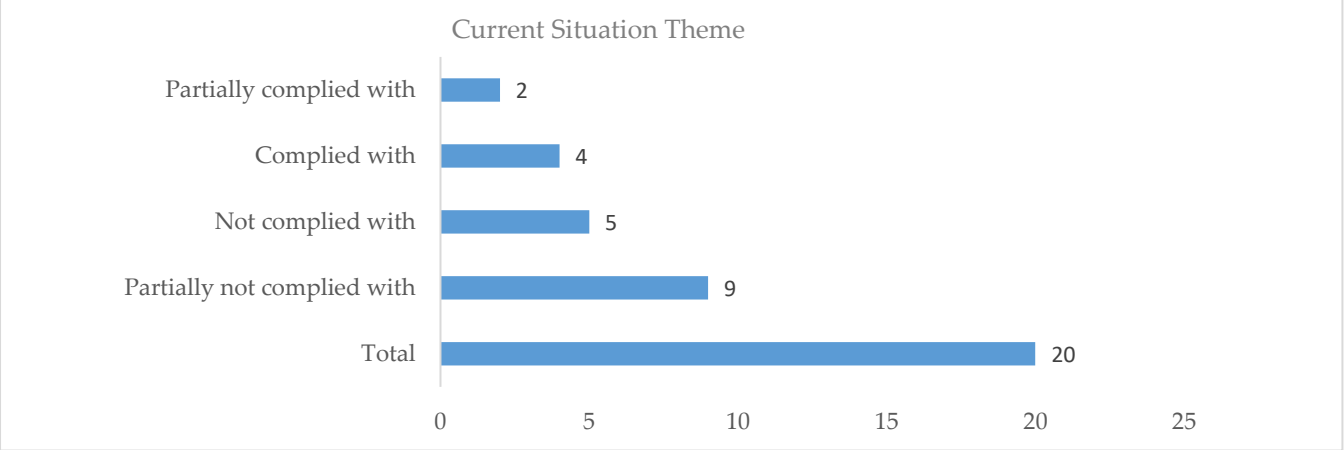

Figure 4: Current Situation Theme

When Figure 4 is evaluated, it is seen that the highest frequency (f=9) of the answers given by the participants to the question *"6- According to the participants, at what level do the administrators have the principles of management by values?",* which was asked to identify whether the administration in the schools where the participants work behaves in accordance with the management by values, is the sub-theme of *"Partially complied with"*. The other sub-themes are respectively; *"Not complied with"* (f=5), *"Complied with" (*f=4) and *"Partially not complied with"* (f=2).

Considering the sub-themes of this theme, the participant with the code A1 said, "*If we look at our country in general, in the current system, only the ability of managers to manage people and perform certain activities are considered. The fact that the work is not disrupted is seen as more important than the manager's having values. Of course, there are exceptions among those who are in the management position*" related to the sub-theme formed as " *Partially complied with* " while the participant with the code A3 expressed her opinion, "*Basically, I believe that, except for a few ones, school administrators lack values that affect the organizational structure*". Furthermore, the participant with the code A8 argued that the principles of management by values are not fully abided by saying that "*I do not think that managers have the values that they should have*".

When the opinions of the participants were evaluated, the participant with the code T3 said, "*I definitely do not think, since I think that there is no merit in any of today's institutions, it is not sensible to think that managers have managerial qualifications in the education field. We can see that this is not possible in the application process.*" related to the sub-theme created as "*Not complied with*" while expressing his opinion with a criticism. The participant with the code T8 said, "*No, I don't think so*" while the participant with the code T10 similarly said, "*Although it is always mentioned lately, I do not think that managers have values and guide, vision and mission shaped by values*" with a negative opinion.

When we look at the opinions on the current situation perception in general, it can be seen that the positive opinion frequency of the participants is higher than the negative opinion frequency. Therefore, it is possible to say that the participants have positive perceptions about whether the managers behave in accordance with the principles of management by values.

DISCUSSION and CONCLUSION

The findings obtained in this part of the study were discussed in relation to the findings of similar studies in the literature.

The perceptions of administrators and teachers about value-based management and the findings collected will be discussed in terms of *gender (2.a.), age (2.b.), seniority (2.c.), grade (2.d.), school region (2.e.), school type (2.f.)* and *profession type (2.g.)* to find out any possible significance.

In addition, these findings will be compared with the findings in similar or different studies in the literature to reach a final conclusion.

Societies, which are formed by people coming together, contain smaller groups aiming to realize common goals. Individuals who come together try to adapt to the organizational structure they are a part of through the value judgments that shape many characteristics of the individual such as feelings, thoughts, beliefs, attitudes and behaviors that they receive from the family and acquired during the socialization process. The management style of the organizational structure of which they are a member plays an important role in the process of adaptation.

In this study, the perceptions of administrators and teachers about values-based management were analyzed. Firstly, it has been analyzed what the participants' perceptions about values-based management are and whether the data obtained on the basis of item contains a significant difference in terms of variables. In addition, the data obtained from the qualitative interview

were compared with the data obtained from the quantitative dimension.

1. According to the findings collected according to the perceptions of teachers and administrators (participants) about the value-based management which is the main purpose of the research, it is seen that the average value in participants' perceptions is quite high. Thus, it is possible to say that the participants think that the school administrators behave in accordance with the principles of management by values. In addition, descriptive analysis of the qualitative data has been applied and it has been found out that the number of opinions containing positive statements (complied with, partially complied with) is higher than the number of opinions containing negative statements (not complied with, partially not complied with). According to these findings, it is possible to say that the perceptions of the participants are positive. These findings are also similar to the quantitative findings of the study. Akın et al., (2018), Ayık et al. (2015) and Yılmaz (2006) have also found that the participants' views on the state of being managed by values are positive. When all these research findings are evaluated together, it can be concluded that schools are largely managed according to values, according to participants' perceptions. As a result, it can be evaluated that according to the opinions of the participants, managers usually consider values in the management process and they use a management approach according to values.

2. *Is there a significant difference between the perceptions of administrators and teachers (participants) about the management of schools according to values regarding variables of gender (2.a.), age (2.b.), seniority (2.c.), grade (2.ç.), school type (2.d.), school region (2.e.) and profession type (2.f.)?*

2. a. When we consider the gender variable, it is found that the t-test analysis result is too low tobe able to say that there is a significant difference between the perceptions of the participants, and therefore the perceptions of women and men about the management by values of the schools, which they work in, are close to each other. Some studies examining the gender variable (Akın et al., 2018; Yılmaz, 2006; Nacar & Demirtaş, 2018; Dağlı et al., 2015; Altınkurt, 2010) have obtained the same findings, and no difference has been found between the perceptions of female and male participants regarding management by values while some studies have found that there is a significant difference between the perceptions of the participants according to the gender variable (Argon et al., 2014). When all these research findings are evaluated together, it can be concluded that there is usually no significant difference between the perceptions of the participants regarding the management of schools according to values according to gender variable. This result can be interpreted as female or male participants have perception that the practices in schools are based on values without gender difference.

2. b. When we consider the age variable, it has been found that there is no significant difference between the age groups included in the study. For this reason, it can be said that the participants have similar perceptions that their schools are managed according to values, regardless of age. In the studies conducted by Nacar and Demirtaş (2018) and Yılmaz (2006), no significant difference between the perceptions of the participants has been found according to the age variable. While this finding is similar to the one obtained in our study, Akın et al. (2018), on the other hand, have found a significant difference among participant perceptions according to the age variable. When all these studies are evaluated together, it can be concluded that among the participants' perceptions according to the age variable, the perception that their schools are managed based on values is dominant. This result can be explained as the management's manners are based on values in the self-directed practices towards the participants, regardless of age difference.

2. c. When the seniority variable is analyzed, a significant difference has been found between the perception grades of the groups. Tukey HSD test was applied to find the direction. As a result of the test, it has been identified that there is a significant difference between the 1st and 3rd groups (1-5 and 11-15 years of experience). While some studies dealing with this variable (Nacar & Demirtaş, 2018; Argon et al., 2014) have found that there is no significant difference, Yılmaz (2006) has found that there is a significant difference between the seniority of teachers. According to the findings of this study, it is possible to say that teachers' perceptions change according to their experience.

2. ç. When the grade variable is considered, no significant difference between the grades was found. For this reason, it can be said that the participants have similar perceptions that their schools are managed according to values, regardless of the grades they work with. In this case, it can be thought that the fact that the participants work at different levels does not affect their perceptions on this subject. No studies have been found in the literature related to this variable that we can compare with.

2. d. When the school type variable is considered, no significant difference between the types of school was found. In the study conducted by Ekşi and Okudan (2011), a similar result has been observed and it has been seen that the perception does not change according to the type of school. In the study conducted by Altınkurt and Yılmaz (2010), a significant difference has been found. Therefore, according to this study, it is possible to interpret that while school type is generally not effective in the management of schools according to values, it can be effective in some other cases.

2. e. When the school region variable is considered, no significant difference between the regions of the school was found. Therefore, it is possible to say that the perceptions of teachers and administrators working in schools in the village or city centre included in our research are similar. In this case, it can be interpreted that the participants' working in different school regions does not affect their perceptions on this issue. In the literature, there is no study which we can make a comparison based on the region variable.

2. f. Finally, when the profession type variable is considered in the quantitative dimension, no significant difference between the profession types was found. In a study conducted by Nacar and Demirtaş (2018), which supports the findings of our research on this variable, it has been found that whether the participants are teachers or administrators does not change sufficiently to make a significant difference on their perceptions, while in the study conducted by Akın et al. (2018), it has been found that there is a significant difference in perception levels in favor of administrators. Therefore, in this study, it can be said that the perceptions of administrators about being managed according to values are more positive than those of teachers. As a result, on the basis of this variable, it is possible to interpret that although the type of profession may generally not be effective in the management of schools according to values, it can be effective in some cases.

Descriptive analysis of the qualitative data has been applied and it has been observed that the number of statements containing positive sentences (*complied with, partially complied with*) is higher than the number of statements containing negative statements (*not complied with, partially not complied with)*. Therefore, it is possible to say that the perceptions of the participants regarding management according to values are positive. This finding is in parallel with those obtained from the quantitative dimension. Hence, when the quantitative findings are examined in general, according to the arithmetic mean, it is possible to say that there is a positive perception about being managed according to values as '*moderately agree'* in the 8th, 9th, and 15th items, '*completely agree'* in the 1st item, and *'highly agree'* in the remaining items. Therefore, according to both the qualitative and quantitative findings of our study, it can be argued that the participants believe that the management in their schools processes in accordance with values. In similar studies, it has been concluded that the participants' perceptions of management practices according to values are positive (Akın et al., 2018; Ayık et al., 2015; Yılmaz, 2006; Nacar & Demirtaş, 2018; Argon et al., 2014; Dağlı et al., 2015; Ekşi & Okudan, 2011; Altınkurt & Yılmaz, 2010; Demirtaş & Ekmekyapar, 2012). In this case, it can be concluded that the participants generally have the perception that the management practices in their schools are carried out according to values.

As a result of the analysis of the qualitative findings, four main themes has been determined as *Organizational Climate Theme (3-4), Classical Management Perception Theme (5.a.), Values Management Perception Theme (5.b.*) and *Current Situation Theme (6*). The findings are given below on the basis of themes, sub-themes and related sub-objectives.

3.-4. According to the data obtained from the analysis of the views expressed by the participants, it is clearly seen that management by values also has an important function in ensuring a healthy communication and strong interaction among the members of the organization. In organizational structures where there is a healthy communication and strong interaction, the potential for success is high and the probability of experiencing some problems that are important in the interaction between members, especially conflict, is quite low. Thus, in a study conducted by Çam and Akgün, it has been found that interpersonal conflicts, which are inevitable in interpersonal relationships, arise from the existence of irreconcilable goals, thoughts, feelings and behaviors between two or more people who interact (Çam & Akgün, 2007).

3.-4. It is known that management by values is effective in ensuring justice and equality in organizational relations. Herein, in a study conducted by Altınkurt & Yılmaz (2010), it has been found that the status of being managed according to values is a significant indicator of teachers' thoughts about organizational justice and equality (Altınkurt & Yılmaz, 2010). In addition, as it is seen from the opinions of the participants, the concepts of justice, equality and merit in this field are frequently mentioned together with values such as respect, love and tolerance. This can be considered as a situation which shows us that these values are highly related concepts.

3.-4. According to qualitative data, it has been concluded that management by values provides common ground, sharing, solidarity and cooperation within the organizational structure. Values are important in the formation of organizational culture as they enable acting together. Herein, many studies in this field show that the key elements in defining organizational culture are common value judgments and widely shared values. Corporate values that overlap with the values of the members of the organization are easily adopted by the employees and contribute to the formation of corporate integration and organizational citizenship awareness (Vurgun & Öztop, 2011).

3.-4. Some of the participants have stated that management by values means treating the members of the organization with respect, love and tolerance. These emotional values, which can also be generalized as courtesy, have great effects on the ease of efficient work and communication among the members of the organization (Gill & Sypher, 2009).

3.-4. In their statements, the participants have expressed that values should be standardized and universal, especially in official institutions. Hence, considering that there is a management according to certain values on an individual basis, it is obvious that it will be difficult to create a common value judgment that can appeal to everyone. Although there are a number of potential ethical values that an organization can choose, there is a need to define ethical values them to be considered as standard and universal. These ethical behaviors should, to the greatest extent possible, maintain their importance despite differences in the moral values chosen, culture, religion, time and circumstances (Schwartz, 2012).

3.-4. The participants have stated that values-based management creates a positive atmosphere in the organizational structure and develops a sense of belonging in the members, which is effective in their voluntary role in the success of the organization and the establishment of peace. Herein, in a study conducted, it has been determined that values-based management practices of administrators working in secondary and high schools play an important role in creating the organizational climate of the school, achieving instructional goals, and the efficiency and effectiveness of schools (Akın et al., 2018).

3.-4. Some of the participants have stated that management by values makes the members of the organization sensitive and responsible. As a matter of fact, it is known that organizational structures with members whose individual values, in other words, individual differences are taken into consideration, are more successful than structures where individual differences are ignored. This is all to say, one of the important issues that can affect the performance of employees is the managers' ability to take individual differences into consideration and administrate the organizations they manage according to their values. Sayles (1981) argues that successful managers are those who give importance to and take into account the attitudes or values of employees (Altınkurt & Yılmaz, 2010).

5.a. It has been determined that the ideas expressed according to the participant views are similar to the common features of the three sub-approaches of the classical management theory (*Scientific Management, Management Process,* and *Bureaucracy)*. Herein, the classical management perception considers the people as a part of a mechanized system and pushes the relationship of the organization with the environment into the background plan. The classical theory sees individuals as a lazy element far from responsibility. In classical management, the practices are carried on by pre- planned rules that are rarely deviated from, and the division of labor is not in an emotional dimension, but is done as dictated by the directives to achieve a completely error-free result, far from sense of belonging.

5. b. Most of the participants have expressed the view that management by values puts people at the centre. The members, who are the basic element of the organization, have remained in the background for a long time and therefore have not been sufficiently valued. Organizational structures in which employees are cared about and their happiness is taken into consideration for organizational practices are definitely experiencing a more successful process. Actually, two of the six basic value concepts identified from the literature review and the experiences of the researchers and valid for Turkey are human dignity and trust in the organization. It is not possible to talk about the existence of a sense of trust in an organization where people stay in the background (Karyağdı, Atay, & Selçuk, 2021).

5.b. The participants have stated that values have a certain standard and that they have a universal quality as well as being individual or organizational. While individual values may vary, in order to minimize conflicts, especially in organizational structures with a formal dimension where people with different beliefs, opinions, feelings and thoughts come together, values are expected to be standard and universal to appeal to all individuals to the maximum extent. In order to create a standard, it is necessary to provide some assurances on an institutional basis and to place it on an official basis. In the European Union, efforts are being made to spread values such as human rights, the value of humanbeings, freedom and democracy and to provide them with official guarantees. Some of the agreed universal values can be listed as follows: Peace, equality, freedom, respect, legality and individual responsibility (Topsakal, 2004).

5.b. The participants have stated that management by values enables them to take initiative when necessary. As a matter of fact, in management by values, bureaucratic and hierarchical practices are the procedures that are used to a minimum extent. The manager has the freedom to choose among alternatives, that is, the authority to take initiative. Nevertheless, decision-making in management is defined as choosing the appropriate one among two or more alternatives (Certo, 2003).

5.b. The participants have stated that management according to values should take individual differences into consideration, because organizational structures are composed of individuals with different characteristics and therefore there is a high probability of incompatible value judgments. In this case, it is important to develop a system that is sensitive to individual differences. In the studies, it was argued that individual differences determine behaviors by affecting motivation and ability, and then the MARS (Motivation-Ability-Role-Situation) model has been put forward (McShane & Von Glinow, 2021).

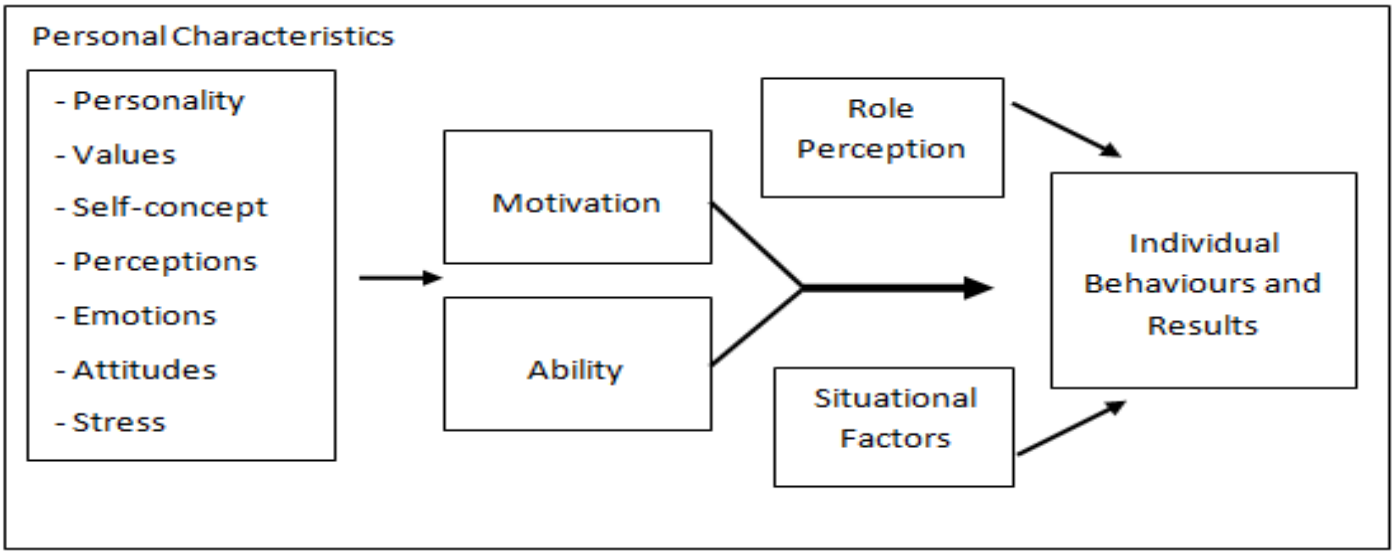

Figure 5: MARS Model (Source: McShane and Von Glinow, 2021).

According to this model, individual characteristics are determinants of motivation and ability and ultimately affect behavior and outcome.

5.b. According to the views expressed by the participants, in contrast to the authoritarian, oppressive, bureaucratic, work and result-oriented perception of classical management, which focuses only on work and results rather than individuals and does not care about the relationship in the organizational structure; in management by values, there is a process-oriented perception that aims to make decisions by all stakeholders, involves sincere relationships, takes individual differences into consideration, and focuses on individuals and results together.

6. In the last theme, which shows the current situation regarding the management of schools according to values, it is seen that the participants have positive views. The frequency of positive statements is higher than the frequency of negative statements. Therefore, in the current situation, it is possible to say that the management practices in schools are carried out according to values.

In summary, according to the results of the analysis of both quantitative and qualitative findings, it has been found that the perceptions of administrators and teachers about the management of schools according to values are positive and there is no significant difference between the perceptions of the participants according to the variables of gender, age, grade, school type, school region and profession type, while according to the seniority variable, there is a significant difference between the 1-5 years and 11-15 years groups in favor of the 1-5 years group. This information makes it possible to interpret that the principles of being managed according to values are followed in the management of schools.

SUGGESTIONS

Suggestions for Researchers

In future studies, researchers can conduct their studies that will include kindergartens and different regions, which is one of the limitations of this study. In addition, a qualitative study can be conducted to examine the negative views, especially the criticisms expressed in a rigid manner, about the management in more details. In addition, as a result of the literature review, no research has been found to compare the grade and school region variables of this study. In this case, addressing these variables may contribute more to the field.

Suggestions for Practitioners

According to the findings obtained from our research, there is a possibility that the administrators acquired the principles of management according to values based on their experiences after they started their profession, in a way, it is individual and in other words, there is no specific standard. As a matter of fact, while some of the participants working in different schools criticize the administrators harshly about management according to values, some of them have a positive opinion, which supports the situation. Considering the following suggestions for practitioners and policy developers in order to establish a certain standard and ensure unity in management may contribute to this field.

- In addition to the existing Administrator Development Program carried out to increase theprofessional knowledge and skills of administrators working in schools affiliated to the Ministry of National Education, it is important to open administrator

training departments within universities.

- In case the department cannot be opened in universities, in terms of being more practical, it may be useful to add a management course to the curriculum for students of faculties of education since they have the potential to become managers.
- After drawing a general framework for values-based management by taking universal, organizational and individual values into consideration, adding an evaluation section in the periodic inspections of schools about whether the framework is complied with can contribute to increasing the implementation. In addition, as a result of these inspections, rewards can be organized to encourage successful examples.

Declaration of Conflicting Interests

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

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Statements of Publication Ethics

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

Author Contribution Statements

The subject of the research was presented by the first author and contributed by the second author. The first author reviewed the literature, collected and prepared the data for analysis, and reported the study. In order to assure consistency, analysis of the data was carried out by the two researchers. Both of the authors discussed the results and contributed to the final manuscript. The first author also translated the final manuscript, which was originally written in Turkish.

Researchers' Contribution Rate

The study was conducted and reported by the first author. The second author consulted the research process and reviewed.

Ethics Committee Approval Information

Ethical approval of this study was comfirmed by Mardin Artuklu University Ethics Committee on March 31,2021 (ref: E-79906804-050.06.04-10237).

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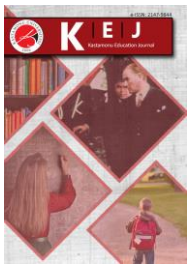

| Research Article / Araştırma Makalesi |

The Effects of Writing to Learn Activities on the 10th Grade on Teaching of Ecosystem Ecology

10. Sınıf Ekosistem Ekolojisi Konusunun Öğretiminde Öğrenme Amaçlı Yazma Aktivitelerinin Etkisi[1]

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Keywords
1.Writing to learn
2.Ecosystem ecology
3.Letter
4.Diary
5.Academic achievement

Anahtar Kelimeler
1.Öğrenme amaçlı yazma
2.Ekosistem ekolojisi
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Abstract

Purpose: The aim of this study is to determine the effect of Writing to Learning (WTL) activities on learning in teaching the subject of Ecosystem Ecology, which is taught in the biology courses in the 10th grade of high school and to examine the course process carried out with WTL activities in terms of student views.

Design/Methodology/Approach: In the research, explanatory mixed research design, one of the mixed method research designs, was used. The study group of the research consists of 87 students studying in the 10th grade of a high school in the center of Bayburt in the spring term of the 2021-2022 academic year. As a data collection tool in the research; Preliminary Knowledge Test (PKT), Ecosystem Ecology Achievement Test (EEAT) and Interview Form (IF) were used. Shapiro-Wilk Test, one of the normality tests, was used in the analysis of quantitative data. Since the data obtained from both tests used in the study did not meet the normal distribution conditions, Mann-Whitney U and Kruskal-Wallis H tests were applied as non-parametric tests. On the other hand, content analysis method was used to analyze qualitative data.

Findings: As a result of the analysis of the data obtained from the EEAT, it was determined that the letter and the diary from the activities of WTL increased the success of the 10th grade students in Ecosystem Ecology. Considering the letter and diary from these activities, it was determined that the letter writing activity contributed more to academic success than the diary writing activity. According to the analysis of the data obtained from the IF, it was determined that the students' views on the WTL activities were positive.

Highlights: As a result of the results obtained from the findings, it is thought that it is important to support the use of WTL activities in secondary level biology courses to increase student outcomes.

Öz

Çalışmanın amacı: Bu araştırmanın amacı, ortaöğretim 10. sınıf biyoloji dersi içerisinde yer alan Ekosistem Ekolojisi konusunun öğretiminde Öğrenme Amaçlı Yazma (ÖAY) aktivitelerinin öğrenmeye etkisinin belirlenmesi ve ÖAY aktiviteleri ile yürütülen ders sürecinin öğrenci görüşleri açısından incelenmesidir.

Materyal ve Yöntem: Araştırmada karma yöntem araştırma desenlerinden açıklayıcı karma araştırma deseni kullanılmıştır. Araştırmanın çalışma grubu 2021-2022 eğitim-öğretim yılı bahar yarıyılında Bayburt Merkezde yer alan bir lisenin 10. sınıfında öğrenim gören 87 öğrenciden oluşmaktadır. Araştırmada veri toplama aracı olarak Ön Bilgi Testi (ÖBT), Ekosistem Ekolojisi Başarı Testi (EEBT) ve Görüşme Formu (GF) kullanılmıştır. Nicel verilerin analizinde normallik testlerinden Shapiro-Wilk Testi kullanılmıştır. Araştırmada kullanılan her iki testten elde edilen verilerin normal dağılım şartını taşımamasına bağlı olarak testlere non-parametrik testlerden Mann-Whitney U ve Kruskal-Wallis H testi yapılmıştır. Diğer taraftan nitel verilerin analizinde içerik analizi yönteminden faydalanılmıştır.

Bulgular: EEBT'den elde edilen verilerin analizi neticesinde ÖAY aktivitelerinden mektubun ve günlüğün 10. sınıf öğrencilerinin Ekosistem Ekolojisi konusundaki başarılarını arttırdığı belirlenmiştir. Bu aktivitelerden mektup ve günlük dikkate alındığında mektup yazma aktivitesinin günlük yazma aktivitesine oranla akademik başarıya katkısının daha fazla olduğu tespit edilmiştir. GF'den elde edilen verilerin analizine göre öğrencilerin ÖAY aktivitelerine ilişkin görüşlerinin olumlu olduğu belirlenmiştir.

Önemli Vurgular: Bulgulardan elde edilen sonuçlar neticesinde öğrenci çıktılarını arttırmak amacıyla, ortaöğretim seviyesi biyoloji derslerinde ÖAY aktivitelerinin kullanımının desteklenmesinin önemli olduğu düşünülmektedir.

[1] This study is based on the second author's thesis.

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INTRODUCTION

The age we live in is seen as an age in which individuals who can learn scientific knowledge, reconstruct what they have learned, develop scientific knowledge and skills, and accordingly use these skills when necessary, direct life and are considered as the age of science. Science can be defined as the ability to think correctly, to search for the right information, to use scientific methods to obtain systematic knowledge, to make the acquired knowledge usable and to make efforts to understand the universe objectively. The fact that individuals interested in science have developed observation skills, problem solving skills, critical thinking, ability to look at events objectively and decision-making skills, have characteristics such as learning, producing and reconstructing what they have learned throughout their lives, and maintaining their sense of curiosity throughout their lives is because science is not static, but rather changing and always open to change. Science starts with curiosity and continues with new discoveries. With the developments in our age, science and scientific studies have gained importance. Thus, learning science, eliminating the sense of curiosity and increasing the predisposition of school-age children to science, and ensuring the permanence of what is learned have led to an increase in the importance of different learning strategies. In these learning strategies, it is important for students to participate and be active in their learning. Writing, which is one of the most important learning strategies that have an important place in students' learning, is important in terms of evaluating products and processes (Emig, 1977). In this direction, the student's willing participation in learning in the process and his/her awareness of responsibility for the result obtained is an important result of writing. Yaman (2008) defines writing as transferring one's feelings, thoughts, experiences and many information that one has learned to others through a number of methods. Other important features of writing are changing one's ideas, organizing information and making it coherent (Rivard & Straw, 2000). Writing is a behavior learned by individuals (Emig, 1977). Moreover, writing involves a slow, simple and artificial process. Students' ability to apply their knowledge more easily is directly proportional to the development of their writing skills. As writing skills develop, thinking skills are controlled and learning becomes more meaningful and effective for minds that are active in this process. As a result, individuals succeed academically and in many other ways throughout their lives. Writing is a metacognitive activity that requires the individual to gain skills in many subjects and to have the ability to coordinate these skills (Can, İşleyen & Küçük-Demir, 2017; Walker, Shippen, Alberto, Houchins & Cihak, 2005). Moreover, writing is a learning tool that allows us to be aware of our thoughts and dreams about a subject we want to write about, and to synthesize our dreams (Graham, 2008). In this direction, recent studies have shown that writing and learning can be considered as a whole.

Writing provides permanent learning because it requires brain functions that involve activities that require the use of many parts of the brain together (Emig, 1977). The aim of ensuring permanence in science education has made it necessary to turn to activities in which the learner is active, aware of the process of receiving information, and can reshape the information rather than the traditional activities used in the education process. Hand, Prain, Lawrence, and Yore (1999) emphasized that writing activities to be used in science education should be writing activities in which students can combine their readiness with new knowledge, make different inferences when necessary, and develop their own learning skills in the light of new concepts. Writing activities can provide retention in science only in such cases. Because traditional approaches to writing in science involve practices in which teachers are active, teachers' lectures on the subjects in the textbooks, teachers' evaluations using the available resources, and students remain in the background and do not actively participate. This process is the process of copying information and does not attract the interest of students who have gained the ability to synthesize information (Yore, Bisanz & Hand, 2003). The aim of education is to enable students to use their cognitive functions at a high level, to participate actively in the process and to take responsibility for the products of the process. In this direction, WTL activities in which students can question and reconstruct their own learning in the process are one of the new approaches used in science education. In contrast to traditional writing practices, using WTL activities enables students to interpret information rather than receive it directly. In the related literature review, it is possible to acquire reading and writing skills in science education and many other disciplines through the implementation of WTL activities (Doğan & İlhan, 2016). This is supported by the fact that teachers in schools create learning environments suitable for WTL activities and ensure students' participation in these activities and that students form positive attitudes in the process. In order for teachers to be able to use the WTL activities, it is important that they have a good knowledge of the activities and therefore a good ability to implement them.

WTL activities, which ensure that students' learning is deep (Thompson, Pilgrim & Oliver, 2005), is a process in which students progress by exploring their own ideas and learning styles about the subject matter studied. Thus, in the learning process, students acquire the ability to identify problems and obtain new information (Beyer, 1982), problem solving skills and the ability to synthesize information. These activities make the student mentally free as the student who uses IWL activities will find the freedom to use their own thoughts and their own words (Yıldız, 2014). A student who feels free is not afraid of making mistakes and is always in search of innovation in an effort to find the truth. They work harder, learn more permanently and their self-confidence increases. Thus, the student's communication skills and determination to work increase (Tynjala, 1998). Nowadays, WTL activities are used in learning processes (Gunel, Hand & Gunduz, 2006). Considering the characteristics of WTL activities, it is thought that writing activities provide meaningful learning in the learning environment and long-term memory of the information learned (Bozat & Yıldız, 2015). WTL ensures that the ideas that people have are more grounded and more organized (Rivard & Straw, 2000). WTL ensures the continuity of knowledge (Klein, 2000; Rivard & Straw, 2000) and enables learners to learn new concepts without misconceptions. WTL facilitates the retention of knowledge (Karadağ & Öztürk, 2022; Öztürk, 2023; Öztürk, Öztürk & Işık, 2016a) by enabling people to examine knowledge in depth (Hand & Prain, 2002). When national and international

publications are examined, it is seen that WTL is widely used as a learning tool in learning environments where students personally participate in the learning process. Many studies have shown that WTL activities have an important role in students' retention and utilization of knowledge (Klein, 2000). It is seen that the learning of students who use WTL activities in lessons is positively affected and their imagination and creativity increase. Realizing that one has learned, realizing that one has the ability to learn creates a sense of perseverance and ensures continuity for the work one wants to accomplish. Thus, students' self-confidence and self-recognition skills improve (Biber, 2012). Considering the characteristics of writing, the writing mentioned in education is not the direct writing of what the student hears in the lesson, but the originality of the products formed as a result of writing. The content of writing that has been used since ancient times includes activities such as transferring exactly what is written on the board to the notebook, taking notes, summarizing what is explained, and unlike these, non-traditional writing activities are learning tools such as poems, songs, concept maps, letters, diaries, and posters (Biber, 2012). These writing activities are learning processes that provide students with permanent learning and allow students to freely express their ideas. When these features are taken into account, it is understood why writing is preferred by all disciplines. In all disciplines, the aim is for students to actively participate in learning processes and for what is learned to be permanent. Undoubtedly, science, which is one of these disciplines, is divided into three disciplines at the secondary education level, each of which is basically common but different in particular. Biology, one of these three science disciplines, is a discipline that studies living things as a science. Therefore, all changes and developments in biology also affect human life. It is very important to learn biology well, to retain and structure what is learned. Since biology is a verbal and Latin-oriented course, ensuring retention in biology lessons, reinforcing the information learned, adapting it to new situations and eliminating misconceptions depend on the quality of teaching activities and activities used in classroom environments. Apart from classical teaching models, learning models in which students actively participate in the process, experience excitement in learning and are able to restructure their knowledge attract attention. Accordingly, teaching is a process in which the student is an active recipient of knowledge and interacts with teachers, peers and experts in this process. Such a process requires the student to be at the center of learning experiences (Whitsed, 2004). The concepts that students use in biology lessons or the meanings that are embedded in their minds may be different from the meaning that the concept actually has in biology. It is important for the biology course that these misconceptions in students' minds are replaced with correct concepts and that their concept learning is correct and permanent. It is also important for students to be active in learning biology and to feel responsible for this learning process in terms of their self-confidence. This study was planned considering the importance of using writing activities, which is one of the new learning methods, in teaching the Ecosystem Ecology subject in the biology course curriculum and learning the concepts related to the subject correctly. Because the subject of Ecosystem Ecology is a subject that should be learned well because it is a subject that describes living things, living things and their environment, the nutrition of living things, the interaction of living things with each other in their nutrition, and the material cycles that are important for our nature and the world. The reason for the use of writing in this context is that writing is a different form of learning in that it allows students to reshape the information they learn through their mind filters. In addition, the active participation of students in the learning process and their cognitive and sensory development in this process make learning WTL activities important.

Experimental studies have shown that WTL facilitates students in learning knowledge, helps students to increase their self-confidence and contributes to their communication skills (Günel, Uzoğlu & Büyükkasap, 2009; Hohenshell, Hand & Staker, 2004). In addition, WTL enables students to actively participate in the learning process and to transfer the information learned not directly but structurally. Learned knowledge needs to be structured, used and transferred appropriately. In other words, knowledge is not to be used exactly as it is, but to be shaped and structured (Perkins, 1999). The most important feature that constructivism adds to education is that the learner does not directly use the information he/she receives, but reinterprets and restructures it in a new way. In constructivism, the individual is not a passive recipient, but a participant in the work, analyzing the information, reinterpreting the information and taking an active role in the process of reconstructing the information. It is emphasized that constructivist learning environments are open to innovations, teachers are guides, students do the work and are effective in giving shape and meaning to knowledge (Evrekli, İnal, Balım & Kesercioğlu, 2009). WTL activities are student-centered activities based on constructivism and are important activities in increasing the retention of learning and supporting meaningful learning.

When the national literature was examined, it was found that there were many studies in which WTL activities were used especially at the secondary school level. However, it is seen that there are a limited number of studies conducted in biology course, which is one of the high school disciplines. It is noteworthy that although the WTL activities are very effective, these activities are not given much space in our schools (Uzoğlu, 2014). It is foreseen that the use of WTL activities in the biology course is important in terms of students' learning and good management of the learning process in terms of having a student-centered structure and supporting meaningful learning. For this reason, it is thought that this study will contribute to the literature in terms of determining whether the WTL activities have a significant effect on students' learning about Ecosystem Ecology in biology course and revealing students' opinions about these activities. In addition, it is foreseen that the study will contribute to the literature and provide a different perspective since the WTL activities have been used very little in biology courses. In line with the results of the study, it is aimed to provide new information in addition to the studies conducted on letters and diary activities from the WTL activities. In addition, it is aimed to clarify what students think about these activities by taking the opinions of students who write letters and diaries for learning purposes. In this context, the study was planned to determine the effect of letter and diary activities, which are among the WTL activities, on learning in the teaching of Ecosystem Ecology subject in high school 10th grade biology course and to examine the lessons carried out with WTL activities in terms of students' opinions. In this direction, the research investigates the answers to the following two questions:

1. Do WTL activities have a significant effect on students' academic achievement?
2. What are the opinions of the students about WTL activities?

METHOD/MATERIALS

Research Design

In this study, explanatory mixed research design from mixed method approaches was used. The explanatory mixed research design is a research design in which quantitative data obtained in the first phase of the study are processed and then qualitative data are collected to analyze the data in depth based on these data (Creswell, 2016; Creswell & Plano-Clark, 2014). In this study, since it was aimed to determine the effect of conducting the 10th grade biology course "Ecosystem Ecology" subject with IWL activities on students' academic achievement and to evaluate the course conducted with IWL activities according to students' opinions, explanatory mixed research design was adopted because it was thought to serve the purpose better.

Research Group

The study group of the research consists of 87 students studying in the 10th grade of a high school in Bayburt Center in the spring semester of the 2021-2022 academic year. In the selection of the study group, the convenience sampling method, one of the non-random sampling methods, was used. In convenience sampling method, the researcher selects the sample group in the most accessible situation and in a way to provide maximum savings (Cohen & Manion, 1998; Ravid, 1994). Since this study was conducted in the school where one of the researchers was working and in the classrooms where he was conducting the biology course, the convenience sampling method was preferred in accordance with the nature of the study. Two of the study groups, consisting of 3 classes in total, were determined as the letter experimental group (LEG) in which the letter was applied and the diary experimental group (DEG) in which the diary was applied. The last group was determined as the control group (CG) in which the current program was carried out, i.e. no WTL activities were implemented. Table 1 shows the demographic information of the students in the experimental and control groups.

Table 1. Demographic characteristics of the experimental and control groups

Groups	Female	Male	Total
LEG	12	17	29
DEG	10	18	28
CG	13	17	30

In addition, in order to realize the qualitative dimension of the research, interviews were conducted with a total of 14 students, 7 from the MDG and 7 from the GDG, taking into account that their gender and achievement status were different from the experimental groups.

Data Collection Tools

Preliminary Knowledge Test (PKT), Ecosystem Ecology Achievement Test (EEAT) and Interview Form (IF) were used in the study. The processes related to the development of the data collection tools are detailed below.

Preliminary Knowledge Test (PKT)

The PKT, which was developed to determine the prior knowledge of the students in the study group and whether the achievement levels of the study groups were equivalent, was created by the researchers by taking the 9th grade curriculum into consideration. In the first stage, the PKT was composed of 30 multiple-choice questions with five options in the form of four distractors and one correct answer. The prepared questions were checked by three experts, two biology educators and one science educator. According to the feedback from the experts, it was determined that the questions were appropriate and in the last stage, the PKT was checked by a language expert and finalized. The pilot application of the PKT was conducted with 63 students enrolled in 10th grade who had previously studied the 9th grade curriculum and were independent from the study group. As a result of the pilot application, 10 questions with low item difficulty were removed from the test and the number of questions was reduced to 20. Finally, the KR-20 reliability coefficient of the PKT was found to be .724. This reliability coefficient indicates that the reliability of the PKT is high (Gürbüz & Şahin, 2014). Each question in the PKT has a score value of 5 and the maximum score that can be obtained from the test is 100.

Ecosystem Ecology Achievement Test (EEAT)

At the end of the implementation process, the EEAT, which was used to control the academic achievement of the students in both experimental and control groups, was created by the researchers by considering the 10th grade Ecosystem Ecology acquisitions. In the first stage, the EEAT was composed of 30 multiple-choice questions with five options in the form of four distractors and one correct answer. The prepared questions were checked by three experts, two biology educators and one science educator. According to the feedback from the experts, it was determined that the questions were appropriate and in the last

stage, the EEAT was checked by a language expert and finalized. The pilot application of the EEAT was applied to 65 students enrolled in 11th and 12th grades who had previously studied 10th grade Ecosystem Ecology. As a result of the pilot application, 5 questions with low item difficulty were removed from the test and the number of questions was reduced to 25. Finally, the KR-20 reliability coefficient of the EEAT was found to be .789. This reliability coefficient shows that the reliability of the EEBT is high (Johnson & Christensen, 2014). Each question in the EEBT has a point value of 4 and the maximum score that can be obtained from this test is 100. This reliability coefficient shows that the reliability of the EEAT is high (Johnson & Christensen, 2014). Each question in the EEAT has a point value of 4 and the maximum score that can be obtained from this test is 100.

Interview Form (IF)

After the implementation was completed, the IF, which was created to obtain the opinions of the experimental group students about the WTL activities, was a semi-structured interview and consisted of six questions. While preparing the IF, studies in the literature were utilized and the developed IF was presented to two researchers who are experts in WTL and their expert opinions were sought. As a result of the feedback from the experts, it was concluded that the questions in the IF served the purpose of the study. In the IF, before the interview questions, there is an instruction to provide information to the students who will participate in the interview about the purpose of the form. Before starting the interviews, the researcher read the instructions to the students participating in the interviews. The interviews were conducted in the school environment in order to utilize a voice recorder to record the interviews and for the students to participate in the interviews in a comfortable environment. Before the interview, the students were told that the transcripts obtained from the voice recordings would be kept confidential and that their names would not be mentioned in the study in any way. The names of the students were coded as L1, L2, ... and D1, D2...

Data Analysis

The quantitative data obtained from the PKT and EEAT were analyzed using the SPSS-22 program. In order to decide which test to use in the analysis of the data, it was first checked whether the data showed a normal distribution. Accordingly, necessary normality tests were performed on the data. Since the number of students in LEG, DEG and CG was less than 50, the results of Shapiro-Wilk test (Büyüköztürk, 2016) were taken into consideration for normality analysis. The process of analyzing all data collection tools is explained in detail below.

Analysis of the data obtained from the PKT

As a result of the normality test of the data obtained from the PKT, p=.042 for LEG, p=.207 for DEG and p=.025 for CG. Since p<.05 for two of the groups, it was determined that the data distributions of the groups were not suitable for normal distribution according to .05 significance level. Therefore, Kruskal-Wallis H Test was used to compare the experimental and control groups. The relevant results are presented in the form of tables in the findings section and interpreted.

Analysis of the data obtained from the EEAT

As a result of the normality test of the data obtained from the EEAT, p= .001 for LEG, p=.001 for DEG and p=.115 for CG. Since p<.05 for two of the groups, it was seen that the data distributions of the groups were not suitable for normal distribution according to the .05 significance level. Therefore, Kruskal-Wallis H Test / Mann-Whitney U Test was conducted and the relevant results were presented in the form of tables in the findings section and interpreted.

Analysis of the data obtained from the IF

The audio recordings of the interviews were digitized at the end of the interviews and then transcribed with a detailed analysis. The content analysis method was used in the analysis. In this analysis method, data are first collected and codes and categories are created, the data obtained are synthesized and interpreted by the researchers, the similarities among the data are grouped under similar codes and categories so that the interlocutor can read, understand and interpret them (McMillan & Schumacher, 2010). With the analysis of the data obtained in this direction, codes were first extracted, and then similar codes (if any) were brought together to form categories. The researchers repeated this process several times. Then, the consistency between the researchers in the codes and categories created was examined with Miles and Huberman's (1994) inter-rater consistency formula. Using Miles and Huberman's (1994) formula, the consistency between raters was calculated as 86%. The structured categories and codes are presented and explained in the findings section in the form of tables.

Implementation Process

The study was conducted with 10th grade students in a high school in the center of Bayburt in the spring semester of the 2021-2022 academic year. There were three groups in the study, one control group and two experimental groups. Before starting the implementation, all groups were administered the PKT. In addition, the experimental groups were informed about the WTL activities. The subject of Ecosystem Ecology was taught two hours a week for 6 weeks with the same teaching method in the study groups. While the lectures were conducted with the help of slide presentations, this process was supported by question-answer,

lecture and test-solving techniques. Unlike the control group, one of the experimental groups was asked to write letters to the 9th grade students at the end of each lesson in line with the WTL activities. In the other experimental group, a diary was kept at the end of each lesson in line with the WTL activities. At the end of the teaching process, the EEAT was administered to all groups as a post-test in order to see the effect of WTL activities on student achievement. In addition, semi-structured interviews were conducted with 14 of the experimental group students (7 students from the LEG and 7 students from the DEG).

FINDINGS

In order to answer the research problem, this section presents the results of the analysis of the data obtained from PKT, EEAT and IF. While explaining the findings, the findings obtained from the data collection tools were presented under separate headings and interpretation of the findings was tried to be made.

Findings obtained from the PKT

The Kruskal-Wallis H Test results of the data obtained from the PKT scores of the research groups are presented in Table 2.

Table 2. Kruskal-Wallis H test analysis results of PKT scores of the research groups

Groups	N	Main Rank	df	X^2	p
LEG	27	49.72			
DEG	27	34.76	2	5.214	0.074
CG	30	42.97			

As seen in Table 2, since the calculated significance value was p>0.05, there was no significant difference between the SCT scores of the research groups (X^2(2, N=84)=5.214; p=0.074).

Findings obtained from the EEAT

The Kruskal-Wallis H Test results of the data obtained from the EEAT scores of the research groups are presented in Table 3.

Table 3. Kruskal-Wallis H test analysis results of EEAT scores of the research groups

Groups	N	Main Rank	df	X^2	p	significant difference
LEG	27	63.56				*DEG-CG
DEG	27	37.07	2	31.675	0.001	*LEG-DEG
CG	30	28.43				*LEG-CG

Table 3 shows that there is a significant difference between the EEAT scores of the research groups since the calculated significance value is p<0.05 (X^2(2, N=84)=31.675; p=0.001). Mann-Whitney U Test was used to determine which of the research groups this significant difference was between. In this direction, it was determined that there was a significant difference between LEG and CG in favor of LEG (p=0.001), between DEG and CG in favor of DEG (p=0.03) and between LEG and DEG in favor of LEG (p=0.001).

Findings obtained from the IF

In the post-implementation interviews with the sample groups who wrote letters and diaries and whose opinions were obtained about the activities of WLM, the students were first asked the question "What comes to your mind when you think of writing activities?". The codes obtained from the students' responses are given in Table 4.

Table 4. Students' perceptions of writing activities

Groups	Code	Student	Frequency
LED	Activity that provides permanency	L_1, L_2, L_3	3
	Transferring information to paper	L_1, L_6	2
	Transferring ideas and thoughts to writing	L_3, L_5	2
	Activity that provides repetition	L_2	1
	Writing letters and diaries	L_3	1
	Literary genre	L_4	1
	Doing homework (summarizing)	L_7	1
DEG	Writing diaries, poems and letters	D_2, D_3, D_6, D_7	4
	Activity that provides permanency	D_3, D_5	2
	Activity that provides repetition	D_1	1
	Activity that provides reinforcement	D_4	1
	Learning by writing	D_5	1

Table 4 shows that students' perceptions of the writing activity were represented by seven different codes in LEG and five different codes in DEG. It was determined that 3 students perceived writing as an activity that provides permanency, 2 students perceived it as transferring information to paper, 2 students perceived it as transferring ideas and thoughts to writing, and 1 student each perceived it as an activity that ensures repetition, letter and diary writing, literary genre and doing homework (summarizing) in LEG. In the DEG, it was determined that 4 students perceived the writing activity as writing diaries, poems and letters, 2 students perceived it as an activity providing permanency, 1 student each perceived it as providing repetition, providing reinforcement and learning by writing. When the table is analyzed, it is seen that among students at LEG, students coded L_1 and L_2 have 2 different opinions, student coded L_3 has 3 different opinions and students coded L_4, L_5, L_6 and L_7 have one opinion when it comes to writing activity. When it comes to writing activity, it is seen that among students at DEG, students coded D_1, D_2, D_4, D_6 and D_7 have 1 opinion, while students coded D_3 and D_5 have 2 different opinions. Some of the codes expressed by the students are given below:

The student coded L_2 stated that writing is to transfer information permanently and to keep it in mind by repeating it with the following sentences:

When I think of writing activities, I think of transferring the information that I have learned permanently and keeping it in my mind by repeating it, in other words, not forgetting it. I think it is very true what they say that words fly and writing remains (L_2).

The student coded L_3 stated that writing is an activity that provides permanence, transferring ideas and thoughts to writing, and writing letters and diaries with the following sentences:

The activity of writing allows us to convey our ideas, opinions or curiosities about any subject by researching and transferring them through certain methods, such as letters or diaries, in other words, through different methods and ensures permanence (L_3).

The student coded D_3 stated that writing is transferring information permanently and writing diaries and letters with the following words:

When I think of writing activities, I think of activities such as letters, diaries, etc. that ensure permanence (D_3).

The student coded D_5 stated that writing is an activity that provides permanence and learning by writing with the following words:

When I think of writing activities, I think of retention and learning through writing (D_5).

The second question asked to the students in the interviews was; "What are the writing activities you use in biology lessons? What are your thoughts about these activities?". The codes extracted from the students' responses to this question are presented in Table 5 and Table 6.

Table 5. Students' views on the types of writing that they use in biology courses

Groups	Code	Student	Frequency
LEG	Letter	L_1, L_2, L_3, L_4, L_5, L_6, L_7	7
	Poem	L_2, L_3, L_5, L_6	4
	Diary	L_3, L_4	2
	Note-taking	L_1	1
DEG	Diary	D_1, D_2, D_3, D_4, D_5, D_6, D_7	7
	Poem	D_5, D_7	2

When Table 5 is taken into consideration, it is seen that students' views on the types of writing they use in biology lessons are gathered in 4 different codes in LEG and 2 different codes in DEG**.** All 7 students in LEG expressed letter writing; students coded L_2, L_3, L_5 and L_6 expressed poem writing; students coded L_3 and L_4 expressed diary writing; and student coded L_1 expressed note-taking. All 7 students in the DEG expressed diary writing, and students coded D_5 and D_7 expressed poetry writing in terms of the types of writing they used in biology lessons. Some of the codes expressed by the students for this question are given below.

The student coded L_2 expressed his/her views that the types of writing they used in biology lessons were writing letters and poems with the following sentences:

We wrote letters and poems in the second semester. We wrote letters to the 9th graders in the first semester and it was good. It was quite fun and we transferred our knowledge (L_2).

The student coded L_4, who stated that they used both letter and diary as a type of writing in biology lessons, expressed her opinion in the following sentences:

We had activities such as letter writing and diary writing. These activities made our learning more permanent (L_4).

The student coded D_2 expressed his/her views that the type of writing they use in biology lessons is diary writing as follows:

In biology lessons, we wrote a diary and in this diary we covered the topic of ecosystem ecology and I benefited from this writing activity, my writing skills improved (D_2).

The student coded D_7 stated that he did poem and diary activities as follows:

In the first semester, we wrote a poem about a topic, and in the second semester, we did a diary writing activity after each lesson (D_7).

Table 6. Students' views on the writing activities they use in biology courses

Groups	Code	Student	Frequency
LEG	Preparing for exams	L_2, L_6	2
	Fun activity	L_2, L_7	2
	Providing permanency	L_4, L_6	2
	Eliminating misconceptions	L_3	1
	Enabling learning	L_1	1
	Activating visual memory	L_4	1
	Way to obtain knowledge	L_5	1
	Facilitating learning	L_6	1
DEG	Providing permanency	D_3, D_5	2
	Eliminating misconceptions	D_1, D_3	2
	Improving writing	D_2	1
	Meaningful learning way	D_3	1
	Providing concept change	D_1	1
	Providing repetition	D_4	1
	Way to obtain knowledge	D_6	1
	Eliminating knowledge deficiencies	D_7	1

When Table 6 is examined, it is seen that the students' opinions about the letter, one of the writing activities they use in biology lessons, are represented by 8 different codes. 2 students from the LEG stated that letter writing helped them prepare for exams. While 2 students stated that letter writing is a fun activity, 2 students stated that it provides permanency, 1 student each stated that letter writing helps to eliminate misconceptions, enables learning, activates visual memory, is a way of obtaining knowledge and facilitates learning. On the other hand, it is seen that the opinions of the students in the DEG about the diary, one of the writing activities they use in biology lessons, are represented by 8 different codes. It is seen from the table that 2 students each stated that the diary provides permanency and eliminates misconceptions, 1 student each stated that the diary improves writing, that the diary is a way of meaningful learning, that it provides concept change and repetition, that it is a way of acquiring knowledge and that it is a way of eliminating knowledge deficiencies. Some of the codes expressed by the students for this question are given below.

The student coded L_3 stated that the letter writing activity helped to eliminate misconceptions as follows:

Through these activities, we actually cleared our misconceptions and learned the real meanings of the terms we knew wrongly (L_3).

The student coded L_4 stated that writing letters increased retention with the following sentences:

I think I achieved more permanent learning through the letter writing activity. Because writing activates visual memory and writing is a more effective learning method than verbal memory (L_4).

The student coded D_1 explained that journal writing provides concept change and is a way to eliminate misconceptions as follows:

We kept a diary in biology lessons. After the lesson, we write a summary of the subject, we can both change our thoughts on this subject and we can eliminate misconceptions. This is healthier for us (D_1).

The student coded D_2 stated that daily writing improves writing with the following sentences:

In the diary we wrote in biology class, we did a study on ecosystem ecology. This study improved my writing skills (D_2).

The third question asked to the students in the interviews was; “Have you ever used the letter and diary writing activity used during the Ecosystem Ecology subject in any lesson before?”. The codes extracted from the students' responses to this question is presented in Table 7.

Table 7. Students' views on whether they have used the letter/diary writing activity before

Groups	Code	Student	Frequency
LEG	No, not used	L_1, L_2, L_3, L_4, L_5, L_6, L_7	7
DEG	No, not used	D_1, D_2, D_3, D_4, D_5, D_6, D_7	7

When Table 7 is analyzed, it is noteworthy that all 14 students interviewed stated that they had not used the letter and diary writing activity in any lesson before.

The student coded L_3 expressed his views that they had not used the letter writing activity in any lesson before with the following sentences:

We had not used it in any lesson before and it was useful for us to use it in the biology lesson. We did this activity before the exams, so it helped us understand our subjects. Since we wrote by narrating, it was more permanent in our brains and it was useful (L_3).

The student coded D_7 expressed his views on this issue as follows:

No, we didn't. Since biology is a detailed course that sometimes requires memorization, the activities helped us a lot (D_7).

The fourth question asked to the students in the interviews was; “What do you think about the writing activities done while studying Ecosystem Ecology? What do you think about the contribution of letter and diary writing activities to your learning? Do you think these activities can be a learning tool for you? Why?”. The findings obtained from the analysis of the students' responses to these questions are presented as codes in Table 8 and Table 9 and as categories and codes in Table 10.

Table 8. Students' views about the letter/diary writing activity on ecosystem ecology

Groups	Code	Student	Frequency
LEG	Mind-developing activity	L_1, L_4	2
	Providing permanency	L_1, L_2	2
	Increasing work efficiency	L_5, L_6	2
	Adding our own interpretation	L_1	1
	Refreshing information	L_2	1
	Ensuring regular repetition	L_7	1
	Learning to write a letter	L_3	1
	Multiple working method	L_4	1
DEG	Providing permanency	D_1, D_3, D_5	3
	Increasing academic achievement	D_3, D_5, D_7	3
	Providing repetition	D_4, D_7	2
	Increasing knowledge acquisition	D_6, D_7	2
	A way to learn new subjects	D_1	1
	Ensuring good self-expression	D_2	1
	Improving writing skills	D_2	1

When Table 8 is examined, it is seen that 2 students each in LEG stated that letter writing is a mind-developing activity and that it helps to increase permanency and study efficiency, and 1 student each stated that adding their own interpretation, refreshing information, regular repetition and letter writing support learning. Again, 1 student evaluated the letter writing activity as a studying method. When the table is examined, it is seen that students' opinions about the diary writing activity they did on Ecosystem Ecology are represented by 7 different codes. Three students each participating in the interviews stated that the diary was an activity that increased permanency and academic achievement. Two of the students stated the diary as an activity that provides repetition and two of them stated it as a method to increase knowledge acquisition. 1 student each evaluated the diary as a way of learning new subjects, a way of expressing oneself well and a method of improving writing skills. Some of the codes expressed by the students for this question are given below.

The student coded L_1 stated that the letter writing activity was a mind-developing activity, ensuring permanency and adding our own interpretation as follows:

It is very useful, it develops one's mind. It also makes what we learn permanent, and if we repeat it once, we don't need to study because it is permanent. Since we write it down, it becomes more permanent (L_1).

The student coded L_2 stated that the letter writing activity provided permanency and refreshing information with the following sentences:

We refreshed our knowledge every week by writing letters. Our knowledge became permanent because of the repetition we did every week. Since we started studying for the exams 4 to 5 weeks in advance instead of one day in advance, the grades we got were high. We also received very productive feedback from the activities we did (L_2).

The student coded D_3 stated that the daily writing activity provided permanency and increased academic achievement as follows:

It was a very good learning method. We got higher grades in the exams and the meanings of the words we learned stayed in our minds more. Since we combined learning by writing with diaries, we described the events or topics in our own words as if we had lived them. This helped us learn better (D_3).

The student coded D_6 stated that the daily writing activity increased knowledge acquisition with the following sentence:

This activity helped me to gain more knowledge in my learning process (D_6).

Table 9. Students' views on the contribution of letter/diary writing activity to their learning

Groups	Code	Student	Frequency
LEG	Providing permanency	L_1, L_2, L_6	3
	Supporting exam grades	L_1, L_5	2
	Providing repetition	L_2, L_5	2
	Enabling homework	L_7	1
	Enabling concept learning	L_6	1
	Reinforcing learning	L_5	1
	Supporting understanding of subjects	L_3	1
	Supporting the use of audio-visual and writing skills	L_4	1
DEG	Providing permanency	D_2, D_5	2
	Ensuring good self-expression	D_2, D_3	2
	Supporting understanding of subjects	D_1	1
	Improving writing skills	D_2	1
	Ensuring understanding of what is written	D_4	1
	Eliminating knowledge deficiencies	D_7	1
	Prompting to think	D_6	1

Table 9 shows that students' opinions about the contribution of letter writing activity to their learning are represented by 8 codes. It is noteworthy that 3 students who participated in the interviews in LEG stated that the letter supported learning by providing permanency, 2 students by supporting the increase of exam grades, 2 students by repeating, 1 student by doing homework, 1 student by enabling concept learning, 1 student by reinforcing learning, 1 student by supporting understanding of subjects and finally 1 student by supporting the use of audio-visual and writing skills. It is also seen in Table 9 that the views of the students in the DEG are represented by 7 codes. It is seen that 2 students each who participated in the interviews in the DEG stated that diary writing supported their learning by providing permanency and better self-expression and 1 student each stated that it supported their learning by enabling them to understand the subject, improve their writing skills, understand what is written, eliminate their knowledge deficiencies and encourage them to think. Some of the codes expressed by the students for this question are given below.

The student coded L_1 stated that the letter writing activity provided permanence and supported the exam grades as follows:

Letter writing activity ensures receptivity, makes our learning realistic and helps us to get high grades in exams (L_1).

The student coded L_3 stated that the letter writing activity helped to understand the subjects as follows:

With the letter writing activity, we learned how to write a letter. It also made great contributions to our understanding of our subjects. Therefore, it was a very good experience for me (L_3).

The student coded D_2 stated that the diary writing activity improved his/her writing ability and enabled him/her to express himself/herself well as follows:

Diary writing activity improved my writing skills. Thus, it enabled me to express myself better in the literature course and in other courses where I use writing (D_2).

The student coded D_4 stated that the diary writing activity enabled her to understand what was written as follows:

The diary writing activity obviously made a positive contribution to me in terms of understanding what I wrote. Because what is usually written stays in my mind when I rewrite it. In addition, since this writing was in the form of reconstruction, I benefited much more (D_4).

Table 10. Students' views on whether the letter/diary writing activity is a learning tool

Groups	Category	Student	Frequency	Code	Student	Frequency
LEG	Yes, it is a learning tool	L_1, L_2, L_3, L_4, L_5, L_6, L_7	7	Non-classical way of learning	L_3, L_4	2
				Providing permanency	L_1, L_6	2
				Providing activism	L_3	1
				Providing repetition	L_2	1
				Providing summarization	L_7	1
				Providing reinforcement	L_5	1
DEG	Yes, it is a learning tool	D_1, D_2, D_3, D_4, D_5, D_6, D_7	7	Providing permanency	D_1, D_3, D_4, D_6, D_7	5
				Ensuring learning-comprehension by writing	D_4, D_5	2
				Using your own sentences	D_3	1
				A way to express yourself well	D_2	1
				Providing repetition	D_1	1

When Table 10 is analyzed, it is seen that the students' views on the question “Do you think this activity can be a learning tool for you?” are gathered in 1 category in LEG and DEG. Moreover, students' views are represented by 6 different codes in LEG and 5 different codes in DEG. It was determined that 2 students each in LEG stated that the letter was a learning tool because it provided non-classical learning and permanency. It is seen that 1 student each in LEG indicated that the letter can be a learning tool because it provides activity, repetition, summarizing and reinforcement. On the other hand, it is seen that 5 of the students in the DEG evaluate the diary as a learning tool because it provides permanence. Two students in DEG evaluated the diary as a learning tool because it enables learning-comprehension through writing. One student each in the GDG evaluated the diary as a learning tool because it enabled them to use their own sentences, to express themselves better and to repeat. Some of the codes expressed by the students for this question are given below.

The student coded L_4 stated that such activities are different from the classical learning method as follows:

Of course it's a learning tool. It is not easy to learn and understand a lesson so well. We could have used normal classical learning methods, but our learning was better because we used this non-classical method (L_4).

The student coded D_3 states that such activities ensure permanence and the use of their own sentences as follows:

It is definitely a learning tool. In fact, it should be used in every lesson, because we can learn better when we write. The topics and the information we learn become more permanent. Since we use our own sentences, we restructure and learn (D_3).

On the other hand, the student coded D_5 stated that these activities provided learning and understanding through writing as follows:

Yes, it can be a learning tool. Because with this activity, we realized better learning and understanding through writing (D_5).

The fifth question asked to the students in the interviews was; “Would you like activities such as letter/diary writing activities to be included in other biology courses? Why?”. The findings obtained from the analysis of the students' responses to this question are presented as category and codes in Table 11.

Table 11. Students' views on whether they would like to use activities such as letter/diary writing activity in other biology courses

Groups	Category	Student	Frequency	Code	Student	Frequency
LEG	Yes, I would.	L_1, L_2, L_3, L_4, L_5, L_6, L_7	7	Providing reinforcement	L_4, L_7	2
				The way to understand subjects	L_3, L_6	2
				Enabling concept learning	L_1	1
				Preparation for exams	L_2	1
				Providing permanency	L_1	1
				Providing visualization	L_4	1
				Learning by doing and experiencing	L_5	1

Groups	Category	Student	Frequency	Code	Student	Frequency
DEG	Yes, I would.	D_1, D_2, D_3, D_4, D_5, D_6, D_7	7	Providing permanency	D_1, D_2, D_3, D_4, D_5, D_6	6
				Providing repetition	D_1	1
				Facilitating learning	D_4	1
				Strengthening memorization	D_7	1

When Table 11 is examined, it is seen that the opinions of the students about whether they would like to use activities such as letter/diary writing activities in other biology courses were collected in a single category in both groups and represented by 7 different codes in LEG and 4 different codes in DEG. Two students each from LEG stated that they would like to use this activity because it provides reinforcement and is a way of understanding the subjects. In addition, 1 student expressed their desire to use the letter writing activity in other biology courses because it provides concept learning, retention of concepts, preparation for exams, visuality and learning by doing and experiencing. On the other hand, 6 students from DEG stated that they wanted to use diary writing because it ensures the retention of concepts. One student each from DEG justified their desire to use the diary writing activity in other biology courses because it supports repetition, facilitates learning and reinforces memorization. Some of the codes expressed by the students for this question are given below.

The student coded L1 stated that he/she wanted to use activities such as letter writing activities in other biology courses, based on the fact that these activities provide concept learning and increase the permanency of concepts as follows:

Of course I would like to. Because in some courses there are really too many concepts, too many subjects, too much information. I would like to use it in order to learn this information and concepts more fully and for the subjects to stay in our minds more (L_1).

The student coded L_3 expressed his/her desire to use such activities on the basis that they helped to understand the subjects as follows:

I definitely want it. Because it is a really useful way of learning. We both write letters and learn the subjects in a good way. If we want to increase our efficiency in other biology lessons, letter writing activities should be done (L_3).

On the other hand, the student coded D_3 expressed his/her desire to use the daily writing activity based on the fact that this activity provides permanency as follows:

I would definitely like to. Because it was more effective in our learning. This way we do not forget what we have learned (D_3).

The student coded D_7 stated that these activities reinforced memorization with the following sentences:

Yes, I do. Because it is a lesson that requires memorization, we strengthen our memorization by writing (D_7).

DISCUSSION AND CONCLUSION

In this study, the effect of these activities on students' academic achievement and students' views about the activities were examined as a result of teaching the 10th grade biology course subject “Ecosystem Ecology” with WTL activities. As a result of the research, it was determined that the implementation of the Ecosystem Ecology subject with WTL activities affected the retention of the subject compared to teaching it as specified in the curriculum. Therefore, it was determined that WTL activities have a positive effect on students' academic achievement and are an activity that improves self-confidence. When Table 2 is examined, there was no difference between the pre-test scores of the students in the groups participating in the study before starting the study. The reason why there was no significant difference between the groups in the pre-test scores is that the students acquired the acquisitions related to the items in the PKT in the 9th grade and the courses were conducted with the same curriculum. When Table 3 is examined, it is seen that while there is a significant difference in favor of the experimental groups in the post-test scores, the difference is especially high in favor of LEG. First of all, it can be said that this difference in the experimental and control groups is due to the activities implemented during the process. It can be said that the reason for the difference between the experimental groups in favor of the LEG students is that the students who wrote letters made an effort to write in a more explanatory way to the students in the lower group (younger), paid more attention for the students in the lower group to learn, chose the concepts they used more carefully in order not to make misconceptions, did research and tried to write by structuring the subject. In addition, the fact that MDG students felt themselves in the position of teachers and made efforts with this awareness had significant effects on both increasing students' self-confidence and permanency of the information learned. It can be said that the achievement scores of the students in the DEG were slightly lower than the students in the LEG because they talked about their own experiences while writing diaries and did not worry about teaching. One of the important situations in WTL activities is that students are active in the writing process, they reconstruct the concepts they have learned in their own minds and thus ensure permanency. Since the restructuring of knowledge in students' minds enables students to transform knowledge into new situations, internalize the subject matter, make their own evaluations and participate in the plot themselves, students can realize

meaningful learning. Considering such effects of WTL activities, it is natural that there is a difference in favor of the students in the experimental group. Considering the literature related to the research topic, it has been revealed in many studies that WTL activities used in science teaching have positive effects on students' academic achievement in science courses (Akçay & Baltacı, 2017; Bozat & Yıldız, 2015; Graham, Kiuhara & MacKay, 2020; Küçük-Demir & İşleyen, 2019; Hand, Hohenshell & Prain, 2007; Koçak & Seven, 2016; Öztürk, Kaymakoğlu & Demiroğlu-Çiçek, 2022; Pınar, 2019; Sinaga & Feranie, 2017; Wright et al., 2019; Villalon & Mateos, 2009). For example, in a meta-analysis study on WTL activities, Graham et al. (2020) point out that writing reliably enhances learning and facilitates learning. Again, when the literature is examined, the importance of the use of WTL activities in biology education, which is a science field, has been emphasized many times. For example, Hand et al. (2007) found in their study that 10th grade students' writing activities on cells and molecular biology topics increased learning outcomes in teaching difficult and complex topics that are new to students and require interest. Duymaz (2011), in his study aiming to determine the effect of using WTL activities for different interlocutors and creating analogies with WTL activities on the teaching of the cell topic, stated that WTL activities were effective in teaching the 9th grade cell topic. In addition, students who used WTL activities stated that they had a positive opinion on the use of these activities. In her study, Pınar (2019) investigated the effect of the diary, one of the WTL activities, on achievement and science attitude. As a result of the study, the researcher determined that students who used these activities were more successful than those who did not use them. On the other hand, Ödün-Başkıran (2022) found that the effect of the diary on students' learning outcomes was not significant in biology lessons supported by the diary, which is one of the WTL activities. However, the study emphasizes that lessons supported by diaries increase students' motivation, interest in the lesson, self-evaluation and teamwork skills. In this study, although it was seen that diary writing increased academic achievement compared to the classical method, it was determined that the diary was behind in increasing academic achievement compared to the letter. It can be said that the biggest factor in this situation is the nature of diary and letter writing. Because students who write diaries transfer their own feelings and thoughts to the diary within the framework of their own potential, while those who write letters tend to take more care to be more efficient because they write to their friends at a lower level. As a result of the literature review, the results in the study overlap with many studies. 10th grade Ecosystem Ecology subject by supporting it with WTL activities, especially contributing to the literature in order to compare the effects of the letter and daily activities used in the study on academic achievement reveals the importance of the study.

It is noteworthy that although all of the students who participated in the interviews stated that they had never used activities such as letter/diary writing before (Table 7), they gave positive feedback about WTL activities with this study. It was determined that students' perceptions of writing activities are repetition of writing, activities that provide permanence and reinforcement, and transferring thoughts to writing (Table 4). The knowledge gained during the implementation process and their own participation in the learning process may be effective in the students' perceptions towards the WTL activities. Because in this process, the knowledge acquired by the students is internalized, reshaped and presented by the students through their mind filters. Therefore, this situation caused the students to gain a positive perspective towards writing activities in the study. All of the students who participated in the interviews emphasized that the writing activities they use (letter and diary writing) can be used as learning tools (Table 10). The students base this emphasis on the fact that the activities used provide permanency, repetition, reinforcement and activity, and that they are a way of using their own sentences and expressing themselves. Moreover, when the students' views on the writing activities used and their contribution to their learning are considered (Table 8-Table 9), it is seen that important points are pointed out. At this point, students state that writing supports concept learning, helps them to understand the subjects, reinforces their learning, provides repetition, encourages them to think, helps them overcome their knowledge deficiencies, increases their academic success, develops their minds and increases their study efficiency. On the other hand, when the students' views on the types of writing used in biology lessons are considered, it is seen that they generally focus on the letter and diary used by the researchers in this study (Table 5). In addition, it is also seen that the students mentioned the poetry writing activity in which the researchers tried to ensure the participation of the students in order to make small practices for writing before starting this study. It is noteworthy that note-taking, one of the traditional writing practices, was also mentioned by a student. The results obtained in this section are important in terms of indicating that the practices created an awareness in students. Because when the relevant literature is examined, the first thing that comes to mind when it comes to writing activities are traditional writing practices such as note-taking, preparing an experiment report, and summarizing. When evaluated within the scope of this study, it is pleasing for researchers that students mainly expressed non-traditional writing practices as opposed to traditional writing practices. When the students' views on the writing activities they used in the biology course are taken into consideration, it is seen that they list the features of writing such as eliminating misconceptions, making learning permanent, meaningful and easier, and being a way of obtaining information (Table 6). It is noteworthy that all the students who participated in the interviews stated that the WTL activities contributed to their learning and expressed positive opinions about the activities. In addition, the students explained that they would like to use the WTL activities in other biology courses by mentioning the contributions of writing to their learning and the learning process (Table 11). There are many studies showing that the positive views of the students participating in the study regarding the SCM activities overlap with the relevant literature (Ay, 2018; Fry & Villagomez, 2012; Hand et al., 2007; İncirci & Parmaksız, 2016; Köksal, 2019; Öztürk et al., 2022; Öztürk, Öztürk & Işık, 2016b; Prain & Hand, 2016). For example, Ay (2018) emphasized that in his study with 5th grade students in which they carried out poetry and letter writing processes, which are among the WTL activities, students stated that they realized more meaningful and permanent learning through these activities. Similarly, İncirci and Parmaksız (2016), in their study on 11th grade students' views on letters

from WTL activities, pointed out that students found WTL activities important and thought that these activities contributed to their positive attitudes towards the course and thus to their success. In this sense, it can be said that the results of the study support the literature.

Ecosystem Ecology is an important topic in terms of conceptual knowledge in the 10th grade Biology course. However, Ecosystem Ecology is a subject which misconception may exist and learning outcomes may affect all grade levels. Therefore, it is important for biology teaching that learning in ecosystem ecology is permanent and without misconceptions. In this study, it was determined that in the teaching of Ecosystem Ecology subject, WTL activities supported students' meaningful learning and increased their academic achievement. Therefore, it is thought that it is necessary to expand the use of WTL activities in order to prevent students from making mistakes in teaching basic subjects such as Ecosystem Ecology and to increase learning outcomes.

RECOMMENDATIONS

Considering the results of the research, the following recommendations can be made:

- Since this study was limited to the topic "Ecosystem Ecology" in the 10th grade biology course and the activities of writing letters and keeping a diary, similar studies can be conducted at other grade levels, on different topics and using different WTL activities.

- Studies can be carried out in multiple experimental groups in order to make comparisons in order to compare the effects of WTL activities on academic achievement.

- Since WTL activities are student-centered, classroom environments can be created where classroom management is good and the course operation is well planned.

- Since the activities of WTL are based on writing, it is possible to work with branches related to writing in a more instructive way.

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The authors declare that there is no conflict of interest with any institution or person within the scope of the study.

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Statements of publication ethics

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

Researchers' contribution rate

The authors contributed equally to all processes of the article. The authors have read and approved the final version of the article.

Ethics Committee Approval Information

The ethics committee document of this study was approved by the ethics committee decision of Bayburt University Rectorate dated 23.05.2022 and numbered 70389.

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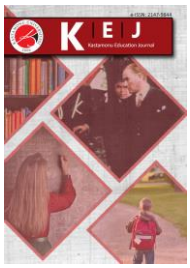

| Research Article / Araştırma Makalesi |

Investigating the Levels of Schools as a Professional Learning Community

Okulların Mesleki Öğrenme Topluluğu Olma Düzeylerinin İncelenmesi[1]

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Keywords
1.Correlational survey
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Abstract

Purpose: The study aims to reveal the levels of schools as being a PLC regarding the opinions of teachers working at the high schools.

Design/Methodology/Approach: The research was carried out in accordance with the correlational survey design. Participants were selected by the stratified sampling method, which is one of the random sampling types. It consists of 385 teachers. The participants of the research are from Maltepe, Sultanbeyli, Esenler and Bakırköy districts of İstanbul during 2021-2022 academic year. To get the data, PLC Scale was used and to analyze descriptive statistics and one-way analysis of variance were used.

Findings: The level of being a professional learning community is at the level of "agree". When the scale's sub-dimensions were examined, a significant difference was found between the employment type, length of service and district variables. On the basis, some suggestions are given to policy makers.

Highlights: It is important to establish an online platform that allows the expansion of the learning network. In addition, a framework plan for schools to ensure sustainability is planned. Lastly, the implementation of rotation between schools could be considered to transform individual intelligence into collective intelligence.

Öz

Amaç: Bu araştırma lise kademesinde görev yapmakta olan öğretmenlerin görüşlerine göre okulların mesleki öğrenme toplulukları olma durumlarını ortaya çıkarmaktır.

Materyal ve Yöntem: Nicel araştırma yöntemlerinden biri olan ilişkisel tarama desenine uygun olarak araştırma gerçekleştirilmiştir. Katılımcılar seçkisiz örneklem türlerinden olan tabakalı örnekleme yöntemiyle seçilmiştir. Araştırmanın örneklemini 2021-2022 eğitim öğretim yılı İstanbul Anadolu Yakasında Maltepe ve Sultanbeyli ilçeleri; Avrupa Yakasında Esenler ve Bakırköy ilçelerinde lise kademesinde görev yapan 385 öğretmen oluşturmaktadır. Araştırma kapsamında 'Mesleki Öğrenme Topluluğu' ölçeği kullanılmıştır. Verilerin analizinde betimsel istatistikler ve tek yönlü varyans analizi kullanılmıştır.

Bulgular: Mesleki öğrenme toplumu olma düzeyi katılıyorum düzeyindedir. Mesleki öğrenme toplumu alt boyutları incelendiğinde istihdam türü, hizmet yılı ve ilçe değişkenleri arasında anlamlı düzeyde farklılık tespit edilmiştir.

Önemli Vurgular: Öğrenme ağının genişlemesine izin veren çevrimiçi bir platform oluşturmak önemlidir. Bunun yanı sıra, sürdürülebilirliği sağlamak adına okullar için bir çerçeve planın hazırlanması yol gösterici nitelikte işlev gösterebilir. Son olarak, okullar arası rotasyon uygulamasının, bireysel zekayı kolektif zekaya dönüştürmek için katkı sağlayacağı düşünülmektedir.

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INTRODUCTION

Along with globalization, the world has turned into a competitive field with the removal of physical borders and the easy accessibility of information. Educational institutions play an important role for countries to maintain their existence and ensure their development. According to Fullan (2001), schools are not successful enough in terms of realizing their goals. The complexity of social life increases the need for different workforces. Schools should contribute to the training of learning citizens who can survive in the new society.

Technically, schools are surrounded with similar characteristics such as structure and instructional program. Despite of similarity, they have also some differences in implementing the program and it arises mainly from the personal experiences of the teachers working at schools (Lingard, Hayes, Mills & Christie, 2003). Bourdieu (1998) explains the case with the concept of "sameness" and "thisness". In terms of sameness, schools have common interests and aims in raising future generations because the school is a place where learning activities are carried out within the framework of a pre-determined program and is open to the public within the specified space and time period in achieving the goals. On the other hand, thisness is used as a concept emphasizing the different in-class practices. The institutions have changing power and relationship patterns in terms of students with individual differences and the key in-school stakeholders. So, reforms that focus only on structure and do not create a common meaning should be questioned in the realization of common goals and in managing differences between schools and within schools (Harris & Lambert, 2003).

Fullan (2001) highlights three components in the policy implementation process: (1) using new materials, (2) engaging in new behaviors and practices, and (3) incorporating new beliefs. The logic lies behind the process is that it should be created a common purpose and language to reinforce the resources on the impact of students' learning. Re-using existing resources by reviewing them or strengthening them with new resources will directly affect learning activities. Changes need to be internalized so that teachers can play an active role as implementers of school development decisions and resources in the impact-making process (Hopkins et al., 2005). It is thought that revealing the beliefs and perceptions underlying teachers' behaviors and encouraging them to change may positively affect the policy implementation process. Harris and Jones (2010), on the other hand, refer to the creation of common meanings in the sustainability of the practice and the collaborative school culture. Changing the beliefs in the direction of reform seems to be associated with increasing commitment among employees.

One of the models that aim to diversify learning activities and to minimize the differences in students' achievement by evaluating the data holistically is professional learning communities (Hord, 2009; Stoll et al., 2006). There are many different definitions for the concept in the literature and it is understood that no consensus has been reached. The situation, lacking shared meaning, lead to ambiguity between the implementation (Hord, 1997; Kools & Stoll, 2016). The complexity of learning activities requires recognizing schools and their environments within the system discipline and combining environmental power with school goals. In this context, it is necessary to increase the capacities of schools and teachers ensuring the participation of out-of-school actors in goal-sharing as well (Hord, 2009; Senge et al., 2014). It is advocated that schools should be evaluated as a community, communication and feedback mechanisms should be strengthened, and students' academic achievement should be evaluated with a holistic approach. (Harris & Jones, 2010; Stoll & Seashore Louis, 2007). The model of professional learning communities (PLC) offers some suggestions for the culture and conditions of schools in the formation of learning individuals.

According to the model of PLC, schools are defined as a place open to non-school stakeholders, where the teachers are seen as action research experts (DuFour & Eaker, 2006). Schools are called as public spaces where action research is carried out to functionally increase students' social and academic success. This community is not limited to one group but includes other groups with similar goals (Annenberg Institute, 2003). Therefore, it is emphasized that schools should participate into school-related works not only in their own but also in district or regional context. A common approach should be adopted in the conducting of provincial or regional studies.

The schools considered as PLC have six sub-dimensions (DuFour, 2003; Hord, 1997; Stoll et al., 2006). These dimensions are listed below:

1. *Shared and supportive leadership*
2. *Shared values and vision*
3. *Collective learning and application*
4. *Shared practice*
5. *Supportive conditions – relationship*

6. Supportive conditions – structure

While the shared and supportive leadership dimension includes items for the development of leadership capacity and the use of participatory method in decision-making process (Harris & Lambert, 2003; Olivier, Hipp & Huffman 2010), the shared values and vision dimension includes the unity of language and meaning in collaborating goal-oriented efforts (Zhang, Yuan & Shao 2022). The collective learning and application dimension is based on the holistic evaluation of academic data and student learning in the evaluation of student achievements in the curriculum (East, 2015; Johannesson, 2022). To transform individual intelligence into organizational one, sharing in-class practices is evaluated within the scope of shared practice dimension (Evens, 2019; Stoll & Louis, 2007). The supportive conditions dimension is examined in terms of relationship and structure. While the informal features of the school are examined in the relationship dimension, the structure dimension includes the features related to the bureaucratic and formal structure of the school (Bolam et al., 2005; Leo & Cowan, 2000; Stoll et al., 2006). On the other side, there are some differences between the schools as PLC and traditional schools (Cormier & Olivier 2009). In the schools as PLC, vision is created and adopted by the actors in the school. The formation of common vision and culture process ensures the sense of mutual responsibility, and the school is a place to reinforce collaborative learning culture in which the vision isn't ignored during planning activities and evaluating them. Moreover, schools are spaces where data-driven management takes place. All activities for students and teachers, including lesson plans, are research-centered and data-driven. In traditional schools, Vision is expressed by the senior administrators of the school, and it is stated that the efforts for the realization of the vision and mission are limited individually.

When the studies in the literature are examined; Achieving desired results with PLC (Leithwood, Leonard & Sharratt, 1998), increasing academic success (Goldenberg, 2004;Louis & Kruse ,1995; Saunders & Goldberg, 2005; Stoll & Seashore Louis ,2007), achievement-oriented teacher behavior change (DuFour & Eaker, 1998; Little, 1982), reinforcing collective capacity (Harris & Jones, 2010), teacher leadership (Newmann, 2000), and positive impact on student learning (Fullan, 2001; Hord, 1997; Stoll & Seashore Louis , 2007) have been reported.

The general purpose of the study is to determine the level of being a professional learning community according to the opinions of teachers working in high schools. The sub-objectives of research is listed below:

1. According to the opinions of teachers working in Anatolian high schools during 2021-2022 academic year, is there any significant difference btw sub-dimensions of PLC and the variables of type of employment, school district and length of service?
2. According to the opinions of teachers, what is the level of PLC scale in terms of sub-dimensions of schools?
3. According to the opinions of teachers, what is the level of schools as PLC?

METHOD

In this section, the research model, population and sample, data collection tool, and analysis of data are given.

The Research Model

It is aimed to determine the level of schools as a PLC based on the opinions of teachers. So, the correlational survey method, one of the quantitative research methods, was used. It aims to determine the degree of change among the variables (Karasar, 2022). It determines whether there is a difference between the variables, and if so, it shows the direction of the significant difference. "PLC Scale" was used to collect data. The independent variable of the research is the type of employment, district, and years of service. The dependent variable is the professional learning community.

Population and Sample

The population of the research is limited to Istanbul and consists of 1472 teachers working at the high school level in Maltepe, Sultanbeyli, Esenler and Bakırköy districts in the 2021-2022 academic year (MEBBİS, 2021). The sample consists of 385 teachers who work in the districts of Bakırköy, Esenler, Maltepe,and Sultanbeyli in İstanbul province during 2021-2022 academic year. The sample is determined by stratified sampling which is one of the random samplings. The population is divided into layers by the researcher according to some characteristics and samples are taken from each subgroup of the universe (Creswell, 2017). The schools in the sampling were classified regarding human development index (INGEV, 2017; 2020). While Maltepe and Bakırköy represents the group of very high development, Esenler and Sultanbeyli represents the group of high and medium level of human development. The teachers working in the districts were reached through MEBBİS. 385 surveys were reached. The acceptable margin of error in social sciences was 0.05 (5%) in the sample size calculations.

Data Collection Tool

The scale of PLC was used to get the data. The scale developed by Olivier Hipp, and Huffman in 2010 was translated by Öğdem (2015). The translated version was used. The scale consists of 52 items and 6 sub-dimensions. The sub-dimensions and Crombach's alpha coefficients conducted by Olivier Hipp and Huffman are given in table 1 below.

Table 1. Crombach's Alpha Coefficients

Sub-dimensions	Crombach's Alpha Coefficients
Shared and supportive leadership	.90
Shared values and vision	.92
Collective learning and application	.91
Shared practice	.87
Supportive conditions - relationship	.82
Supportive conditions - structure	.88

The sharing and supportive leadership refers to the decision processes and practice in the school. Shared values and vision consists of items related to creating common meaning. Collective learning and applications includes methods used withing the program to ensure holistic development of students. The shared practice refers extending in-class practices into the whole school. The informal aspect of school is emphasized in the supportive conditions-relationship, and the formal aspects of the school are expressed in the supportive conditions-structure.

Data Analysis

Collecting the data, questionnaires were checked. It was reached to 385 scales. SPSS 21 package program was used to analyze. To determine the level of schools as a PLC; arithmetic mean, frequency, standard deviation, and percentages were calculated for each sub-dimension. Before starting the statistical calculations, the normality test was performed, and the results are given below.

Table 2. PLC The Normality Test Results

Sub-dimensions	N	$\bar{X}$	SS	Skewness	Kurtosis	
Shared and supportive leadership	385	3.62	.93	-.348	-.909	Normal
Shared values and vision	385	3.64	.88	-.678	.048	Normal
Collective learning and application	385	3.61	.88	-.471	-.109	Normal
Shared practice	385	3.55	.90	-.427	-.435	Normal
Supportive conditions - relationship	385	3.60	.96	-.627	-.199	Normal
Supportive conditions - structure	385	6.6	.90	-.541	-.195	Normal
Overall	385	6.6	.90	-.430	-.220	Normal

According to Hair et al. (2003) the normal distribution of the data can be understood by looking at the skewness and kurtosis values between -1.0 and +1.0. When Table 1 is examined, the skewness and kurtosis values between -1 and +1 show that the data has a normal distribution. Therefore, the data was analyzed using parametric tests.

Ethic

The researcher applied to Yildiz Technical University for ethics committee permission. Then, the researcher submitted the necessary documents to the Istanbul Provincial Directorate of National Education. After permission was obtained, the permission document was sent to the schools via the DYS system. Finally, the researcher visited the schools and distributed the forms to the teachers. The names of the participants were not included in the scale.

FINDINGS

In the section, the findings related to the sub-objectives of the research are given in order.

Findings Regarding the Length of Service Variable

According to the opinions of teachers, the findings regarding the significant difference between the variable of length of service and the level of being PLC of the schools are given in Table 3.

Table 3. ANOVA Results for Length of Service Variable

Sub-dimensions	Years of Service	n	$\bar{X}$	SS	F	p
Shared and supportive leadership	1-3 (1)	217	3.77	.88	14.457	<.001*
	4-6 (2)	84	3.16	.92		
	7-9 (3)	84	3.69	.93		
Shared values and vision	1-3 (1)	217	3.72	.90	8.818	<.001*
	4-6 (2)	84	3.30	.91		
	7-9 (3)	84	3.81	.71		
Collective learning and application	1-3 (1)	217	3.71	.92	4.971	.007*
	4-6 (2)	84	3.35	.81		
	7-9 (3)	84	3.60	.82		
Shared practice	1-3 (1)	217	3.62	.94	4.237	.015*
	4-6 (2)	84	3.30	.86		
	7-9 (3)	84	3.61	.81		
Supportive conditions - relationship	1-3 (1)	217	3.68	1.02	5.886	.003*
	4-6 (2)	84	3.28	.88		
	7-9 (3)	84	3.70	.92		
Supportive conditions - structure	1-3 (1)	217	3.67	.91	3.797	.023*
	4-6 (2)	84	3.69	.79		
	7-9 (3)	84	3.55	.70		
Overall	1-3 (1)	217	3.70	.83	8.628	<.001*
	4-6 (2)	84	3.29	.76		
	7-9 (3)	84	3.67	.67		

*p<.05

It has been understood that there is a significant difference in the perceptions of teachers towards the professional learning community with the variable of length of service. Based on the findings, it was found that teachers of 1-3 service years have more positive thoughts about sharing leadership in their schools and their schools being a PLC. When the overall score is considered, it can be interpreted that school administrators share their authority, have a common vision in in-school activities, and teachers share in-class practices with other colleagues.

Findings Regarding the Employment Type Variable

According to the opinions of the teachers, the findings regarding the significant difference between the level of being a PLC of the schools and the employment type of the teachers (tenured-contracted-paid) variable are given in Table 4.

Table 4. ANOVA Results for Employment Type Variable

Sub-dimensions	Employment Type	n	$\bar{X}$	SS	F	p
Shared and supportive leadership	Tenured (1)	289	3.53	.92	6.285	.002*
	Contracted(2)	77	3.94	.90		
	Paid(3)	19	3.75	.84		
Shared values and vision	Tenured (1)	289	3.61	.87	1.227	.294
	Contracted(2)	77	3.78	.95		
	Paid(3)	19	3.56	.75		
Collective learning and application	Tenured (1)	289	3.57	.87	3.046	.049*
	Contracted(2)	77	3.80	.90		
	Paid(3)	19	3.34	.89		
Shared practice	Tenured (1)	289	3.51	.88	2.334	.098

	Contracted(2)	77	3.73	.97		
	Paid(3)	19	3.34	.78		
Supportive conditions - relationship	Tenured (1)	289	3.56	.95	1.682	.187
	Contracted(2)	77	3.77	1.00		
	Paid(3)	19	3.47	.91		
Supportive conditions - structure	Tenured (1)	289	3.59	.89	1.681	.188
	Contracted(2)	77	3.74	.96		
	Paid(3)	19	3.34	.85		
Overall	Tenured (1)	289	3.56	.78	3.161	.044*
	Contracted(2)	77	3.81	.87		
	Paid(3)	19	3.47	.72		

*p<.05

There is a significant difference between the type of employment variable and the perception of being a PLC. This difference can be seen in the sub-dimensions of shared and supportive leadership, collective learning and practices, and overall score. It was determined that the contracted teachers achieved the highest average in the supportive leadership sub-dimension. Based on the data, it can be inferred that these teachers use the holistic approach in the evaluation of students' academic data in their schools and they think that leadership capacity is shared.

Findings Regarding the School District Variable

According to the opinions of the teachers, the findings regarding the significant difference between the level of being a PLC of the schools and the variable of the school district where the teachers work are given in Table 5.

Table 5. ANOVA Results for School District Variable

Sub-dimensions	School District	n	$\bar{X}$	SS	F	p
Shared and supportive leadership	Bakırköy (1)	106	3.18	.89	29.023	<.001*
	Esenler(2)	128	4.02	.69		
	Maltepe(3)	74	3.21	.87		
	Sultanbeyli(4)	77	3.96	.95		
Shared values and vision	Bakırköy (1)	106	3.34	.86	17.269	<.001*
	Esenler(2)	128	3.96	.77		
	Maltepe(3)	74	3.29	.81		
	Sultanbeyli(4)	77	3.87	.90		
Collective learning and application	Bakırköy (1)	106	3.33	.86	9.649	<.001*
	Esenler(2)	128	3.78	.84		
	Maltepe(3)	74	3.40	.79		
	Sultanbeyli(4)	77	3.89	.94		
Shared practice	Bakırköy (1)	106	3.28	.91	9.208	<.001*
	Esenler(2)	128	3.73	.80		
	Maltepe(3)	74	3.33	.83		
	Sultanbeyli(4)	77	3.83	.96		
Supportive conditions - relationship	Bakırköy (1)	106	3.28	1.02	12.473	<.001*
	Esenler(2)	128	3.85	.82		
	Maltepe(3)	74	3.30	.84		
	Sultanbeyli(4)	77	3.89	.99		
Supportive conditions - structure	Bakırköy (1)	106	3.41	.08	11.134	<.001*
	Esenler(2)	128	3.78	.06		

	Maltepe(3)	74	3.26	.100		
	Sultanbeyli(4)	77	3.93	.108		
Overall	Bakırköy (1)	106	3.30	.77	18.741	<.001*
	Esenler(2)	128	3.85	.65		
	Maltepe(3)	74	3.29	.68		
	Sultanbeyli(4)	77	3.90	.91		

*p<.05

There is a significant difference between the perception of being a PLC and the school district. When the overall score and sub-dimensions were evaluated, the difference resulted in favor of the teachers working in Esenler and Sultanbeyli districts. According to the 2017 and 2020 data prepared by the Human Development Foundation (INGEV), Esenler and Sultanbeyli districts are in the high and medium development level group, while Bakırköy and Maltepe are in the high human development group. According to the findings, it can be inferred that teachers working in districts with a relatively low level of human development share leadership capacity in their schools, ensure participation in decisions, have strong communication mechanisms, evaluate students' success levels holistically, and have a school culture that allows sharing in-class practices.

Findings Regarding the Sub-dimensions of PLC Scale

According to the opinions of the teachers, the findings obtained as a result of the sub-dimensions of the level of being a PLC of their schools are given in Table 6.

Table 6. Sub-dimensions of PLC

Sub-dimensions	Mean	Standard Deviation
Shared and supportive leadership	3.62	.93
Shared values and vision	3.64	.88
Collective learning and application	3.61	.89
Shared practice	3.55	.90
Supportive conditions - relationship	3.60	.96
Supportive conditions - structure	3.61	.90

When the table is examined, it is seen that the shared practice dimension has the lowest average ($\bar{x}$ =3.55). Based on the data, it can be said that sharing personal experience among teachers should be improved compared to other dimensions. Shared value and vision ($\bar{x}$=3.64) sub-dimension have the highest mean. In this context, it is concluded that the school vision is formed through participation and the vision is considered by teachers in classroom practices.

Findings Regarding the PLC Scale

According to the opinions of the teachers, the findings obtained as a result of the examination of the level of their schools being a PLC are given in Table 7.

Table 7. PLC Scale

Scale	*Mean*	*Standard Deviation*
PLC Scale	3.60	.80

When the table is examined, it is seen that the level of being a professional learning community of schools at the high school level is in the range of I agree ($\bar{x}$=3.60). Therefore, it can be referred that power of administrators are shared and collective efforts of teachers in organization of learning environments are encouraged at schools. Moreover, all staff actively participate in decision-making process. At schools, the dominant culture is collaborative learning and common language is created on the school vision. Lastly, it can be mentioned that among teachers, some activities allowing productive dialogue are conducted.

DISCUSSION

According to the opinions of the teachers working at the high schools, the status of being a PLC is in the range of “agree”. While shared values and vision dimension has the highest average, the lowest average was recorded as shared practice. Reviewing literature, only a few studies have conducted on high schools. In the recent study, Ekinci’s (2018) research reported that high schools were at the level of “agree”. For the elementary schools, the perceptions of being a PLC were found to be at the level of

agree (Cücemen, 2018; Ilgan et al., 2011; ; Kalkan, 2015; Öğdem, 2015; Ünver, 2021). The other study stated they were at the level of “very agree” (Taş, 2021). So, it can be stated that our finding is consistent with what has been found in previous research.

The highest average indicates that schools have a collectively prepared vision and mission document. It has been adopted by the teachers and it is possible to see its reflections in their classroom practices. The lowest dimension states that lesson observations and feedback practices should be given more to evaluate students holistically. Contrary to the results, in Ekinci's (2018) study, it was noted that the highest dimension was shared and supportive leadership.

Our study also indicates that there is a significant difference between the employment type and PLC status. It is seen that the perceptions of tenured teachers have more negative thoughts than those working in contracted teachers. Regarding previous research, no study to date has examined the variable. However, when the commitment variable is searched, on the contrary of our findings, tenured teachers have more positive thoughts (Savgun, 2009). The researcher mentions that it is because of tenured teachers’ right and responsibilities.

When the school district variable was examined, it was concluded that there was a significant difference. The difference in the overall score and in all sub-dimensions resulted in the disadvantage of Bakırköy and Maltepe districts. According to the human development index (INGEV, 2017; 2021), Bakırköy and Maltepe districts are in the very high category, while Esenler and Sultanbeyli are in the high/medium category, respectively. In this context, it is possible to talk about an inverse relationship between PLC level and the level of human development index.

It was expected that there would be a positive relationship between the increase in the development level of the districts and the perceptions of being a PLC. However, the study states the opposite of this situation. It is thought that this situation is related to the student profile in the districts. It is stated that access to many institutions such as health and education is easier in districts with a high human development index. Easy access and higher socio-economic status can be interpreted as a better student profile in academic terms. Considering the minimization of student failure, which is the basis of the model, it can be considered as an expected situation that the perception of being a community is high in districts with lower groups in the human development index. It can be deduced that increasing the level of success and lowering disciplinary problems increase the commitment of the teacher community. Besides, when the comments of the teachers were listened while the questionnaires were being solved at the schools, it was heard that the teachers in Bakırköy and Maltepe districts complained more about their situation and that the branch teachers' board (ŞÖK), general assembly meetings and group meetings were not effective in decision making.

A significant difference was found between the length of service variable in the schools of high school teachers and their perceptions of PLC. It has been concluded that the perceptions of teachers of 1-3 years in the schools they are working in have more positive perceptions than those of 4-6 years. Put differently, as the length of years increase, firstly the perceptions decrease, and then as the years pass, it has been determined that the perceptions return to the positive side.

Similar findings were found in the literature regarding the length of service variable (Cücemen, 2018; Taş, 2021; Ünver, 2021). Contrarily, Bal (2011) stated that there was no significant difference in the variable of years of service as a learning organization. Şen (2019), on the other hand, found a difference in the size of mental models of learning organizations. Şen explains this difference by referring to career stages. Aydemir, and Koşar (2019), did not find a significant difference in the general average, but found a significant difference between the sub-dimensions only in the dimension of shared vision.

Regarding the literature, there are mainly quantitative studies, but only limited qualitative research were studied (Dervişoğulları, 2014; Karadağ & Bellibaş, 2017). Both research states that there aren’t any class observations or reflection activities, sharing authority is limited. Besides, Karadağ and Bellibaş mentions that schools’ supporting conditions-structures aren’t sufficient to sustain the community.

Recommendations:

a. Considering the findings obtained from the length of service variable, it can be recommended to use the rotation between schools to ensure that individual effort is transformed into a collective effort. Because the finding regarding the years of service shows that as the service period of teachers increases, their level of being a professional learning community weakens except the dimensions of shared values and vision and supportive conditions relationship.

b. Considering the findings obtained from the district variable, it can be suggested to benefit from collective experience in the formation of collective intelligence. Grouping between schools can be made. The grouping criteria may vary, and the human development index can be used as in the study. According to the results of the human development index, high and medium group level of schools can be matched to provide information and practice flow in the field. This can contribute to the dissemination of good practices.

c. Based on the findings obtained from the level of being a PLC of schools, it can be suggested that administrators set special time periods and implement reflective dialogue practices among colleagues to allow the sharing of in-class practices among teachers to support shared personal practices of the lowest average. Teachers can be grouped to solve the problems encountered in the school and teamwork can be carried out for the solution of the teachers. The level of effectiveness of teamwork can be evaluated by assigning certain performance tasks by the school administration. Thus, it is expected that it will contribute to data-based management, which has an important place in the community model, and to the interpretation of data in a meaningful way.

d. It is recommended for future researchers to conduct interviews with school administrators to reveal the strategies and practices of the schools towards becoming a professional learning community. They may also review official documents.

e. Lastly, by using maximum diversity sampling, interviews with school administrators and teachers can be conducted and field practices can be used for future applications.

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Statements of publication ethics

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

Researchers' contribution rate

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

Ethics Committee Approval Information

Yildiz Technical University Graduate School of Social Sciences Ethics Committee Date: 25.01.2022

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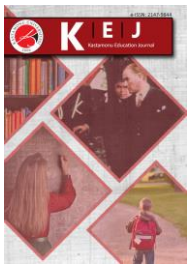

| Research Article / Araştırma Makalesi |

Investigation of SACs High School Mathematics Material Based on PISA Proficiency Levels and Contexts[1]

BİLSEM Lise Matematik Materyalinin PISA Yeterlik Düzeyleri ve Bağlamlarına Göre İncelenmesi

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Keywords

1. Mathematical Literacy
2. Mathematics Proficiency Levels
3. Mathematical Literacy Contexts
4. SAC
5. Gifted Students

Anahtar Kelimeler

1. Matematiksel Okuryazarlık
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Abstract

Purpose: This study's primary aim is to categorize questions from the activity forms of the algebra and number theory module in the High School Mathematics Auxiliary Course Material, published by the Ministry of National Education (MoNE) in 2021 for SACs. This categorization was based on the PISA mathematics proficiency levels and mathematical literacy contexts.

Design/Methodology/Approach: The document analysis technique, a qualitative research method, was employed for this investigation. A cumulative count of 199 questions from the activity forms of 19 activities within the auxiliary course material were examined.

Findings: Based on the PISA Mathematics proficiency levels, the majority of the questions were at Level 2 (41.11%), while the fewest were at Level 5 (8.12%). Regarding context, the fewest questions were in the societal context (1.01%), and the vast majority were in the scientific context (90.80%).

Highlights: The study concluded that the levels and contexts of questions in the course material were not evenly distributed, even though questions from every level and context were present. It is recommended that future course materials intended for gifted students should place a greater emphasis on ensuring a balanced distribution and include a higher number of questions that demand advanced skills.

Öz

Çalışmanın amacı: Bu çalışmanın temel amacı, MEB tarafından 2021 yılında BİLSEM'ler için yayınlanan Lise Matematik Yardımcı Ders Materyalinde yer alan cebir ve sayılar teorisi modülünün etkinlik formlarında yer alan soruları kategorize etmektir. Bu kategorilendirme PISA matematik yeterlik düzeyleri ve matematik okuryazarlığı bağlamları temel alınarak yapılmıştır.

Materyal ve Yöntem: Bu araştırma için nitel bir araştırma yöntemi olan doküman analizi tekniği kullanılmıştır. Yardımcı ders materyalinde yer alan 19 etkinliğe ait etkinlik formlarındaki toplam 199 soru incelenmiştir.

Bulgular: PISA Matematik yeterlilik düzeylerine göre, soruların çoğunluğu 2. Düzeyde (%41,11), en azı ise 5. Düzeyde (%8,12) yer almaktadır. Bağlam açısından, en az soru toplumsal bağlamda (%1,01), büyük çoğunluk ise bilimsel bağlamda (%90,80) yer almıştır.

Önemli Vurgular: Çalışma, her düzey ve bağlamdan sorular bulunmasına rağmen, ders materyalindeki soruların düzey ve bağlamlarının eşit dağılmadığı sonucuna varmıştır. Üstün yetenekli öğrencilere yönelik gelecekteki ders materyallerinin dengeli bir dağılım sağlamaya daha fazla önem vermesi ve ileri beceri gerektiren daha fazla sayıda soru içermesi önerilmektedir.

[1] The study was presented as an oral presentation at the Education of the Gifted Congress organized by Gazi University on November 2, 2023.

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INTRODUCTION

The Organization for Economic Co-Operation and Development (OECD, 2013) defines mathematical literacy as the capacity to employ decision-making and mathematical thinking processes to address challenges people confront today and will encounter in the future. Another perspective posits that mathematical literacy embodies an individual's ability to reason, analyze, formulate and tackle problems within real-world settings (Martin, 2007). Given this context, it is widely acknowledged that possessing foundational mathematical literacy enables individuals to effectively navigate the complexities of contemporary life (Steen et al., 2007). Therefore, the overarching objective of mathematics education should be the cultivation of mathematically literate individuals. Educational systems worldwide aim to enhance mathematical literacy through varied curricula that integrate practical and theoretical mathematical education, preparing students not only for academic pursuits but also for informed and competent participation in a rapidly advancing society. With this in mind, the Ministry of National Education (2018) is committed to fostering robust mathematical literacy skills in everyone, emphasizing the understanding and pragmatic application of mathematical notions in daily life. Since 2003, Turkey has been an active participant in the Program for International Student Assessment (PISA), which shares these educational objectives.

PISA, conducted by OECD, is a triennial survey designed to gauge the ability of 15-year-old students to apply the knowledge and skills they've acquired in school to real-world situations (MoNE, 2020). Essentially, PISA aims to assess the degree to which students can contextualize classroom learning in real-world settings. This research assesses participating countries' educational efficacy in reading proficiency, science literacy, and mathematical literacy based on student performance. Participating countries utilize these evaluation findings to shape their educational strategies (Baştürk Şahin and Altun, 2019). PISA analyzes mathematical literacy in three aspects: mathematical processes and the underlying abilities, mathematical content, and contexts (OECD, 2019a). Among these, the aspect of context is particularly significant because it ensures that mathematical tasks are relevant to real-world settings, which enhances students' ability to apply mathematical concepts practically and meaningfully. The contexts defined by PISA include personal, societal, occupational, and scientific settings, each tailored to test students' skills in varying real-life situations. Besides, in 2012, PISA developed specific definitions of mathematical literacy levels tailored to each student level, detailing the six levels of proficiency. These levels range from basic numerical tasks to complex mathematical reasoning and problem-solving, highlighting the importance of accurately assessing and subsequently fostering a student's progression in mathematical understanding and application. In this framework, PISA has defined the essential skills and knowledge required for individuals to be educated as mathematically literate. Levels and contexts are key variables in this study, as they provide insights into students' mathematical development and illustrate how effectively they can integrate mathematics into various aspects of their lives and the wider world. Understanding levels and contexts in mathematical literacy is particularly critical in gifted education, as it helps tailor teaching methods and materials to challenge gifted students and meet their advanced learning needs effectively.

Gifted individuals, characterized by superior cognitive, emotional, and behavioral traits compared to their peers, possess above-average creative thinking abilities and a penchant for undertaking challenging tasks. They also demonstrate a remarkable aptitude for managing and organizing data, and an ability to transpose mathematical principles across different domains (Sisk, 1987). Their advanced cognitive abilities uniquely position them to excel in mathematical literacy, which involves not just computational skills but also the ability to reason, solve complex problems, and effectively communicate using mathematical concepts (Hardianti & Zulkardi, 2019). This form of literacy is crucial as it enables gifted students to engage deeply with mathematical ideas and to apply these skills across various domains, enhancing both their academic performance and future opportunities (Kurnaz, 2018). Despite their high levels of mathematical ability, gifted students may still encounter challenges in metacognition and problem-solving, underscoring that mathematical literacy involves more than innate ability; it requires the development of advanced planning, monitoring, and evaluative skills concerning one's own thinking processes (Sihotang et al., 2020). Therefore, equipping gifted individuals with robust mathematical literacy is fundamental not only for their personal fulfillment but also for leveraging their potential to contribute significantly to societal advancement. In this light, it is crucial for educational systems to incorporate comprehensive strategies that foster these skills, ensuring that gifted students can navigate and excel in a complex, rapidly evolving global landscape.

In Turkey, gifted students have the opportunity to enhance their education at Science and Art Centers (SACs), which are specialized institutions offering supplemental education to cultivate and maximize their unique talents (Karabulut et al., 2023). SACs' primary objectives include raising awareness of individual talents, fostering their growth to maximize potential, and honing their problem-solving skills (MoNE, 2019). In line with their advanced cognitive characteristics, students are supported by project-based, interdisciplinary, enriched, and differentiated education programs. Complementary course materials are also provided to aid them in producing original works, projects, and productions that match their abilities (MoNE, 2019). The "SACs High School Mathematics Auxiliary Course Material," published by the Ministry of National Education's General Directorate of Special Education and Guidance, is tailored for students specializing in mathematics at SACs. This material provides a differentiated and enriched educational resource, supporting an in-depth education in mathematics for students in the 7th and 8th grades. The SAC program, tailored for these students, offers students an in-depth education in their chosen disciplines and emphasizes interdisciplinary connections to equip them with comprehensive knowledge, advanced skills, and relevant behaviors, ultimately encouraging them to make significant contributions in their respective fields (Karaaslan et al., 2021). This specialized resource is designed to cater to the higher cognitive capabilities of these students, providing them with a rigorous mathematical curriculum

that challenges and extends their abilities beyond the standard educational offerings. It strategically emphasizes the importance of interdisciplinary connections and advanced problem-solving skills, essential for gifted students to fully exploit their potential and excel in complex mathematical concepts and applications.

The "SACs High School Mathematics Auxiliary Course Material," includes 39 activities designed for educators, incorporating lectures, sample questions, student activity examples, additional project suggestions, measurement and evaluation tools, and "Activity Forms" all aligned with curriculum objectives. Organized modularly, the book is divided into four key modules: analysis, finite mathematics, geometry, and algebra with number theory. In this study, we have focused on evaluating the questions in the algebra module in terms of level and context because previous research indicates that students often struggle with algebra due to its abstract nature and the low level of challenge provided by the questions in existing educational resources (Şaban, 2019; Akkaya & Durmuş, 2006). These issues are largely attributed to the questions' lack of complexity and their failure to effectively connect with real-world applications, underscoring the need for a more rigorous and contextually relevant approach in educational materials.

In our study, we analyze the complexity and real-world applicability of algebra questions within textbooks, aiming to provide insights that curriculum developers and textbook authors can use to better align educational materials with the cognitive needs of gifted students. By focusing on the levels and contexts of algebra questions, we highlight the essential role that textbooks play as primary educational tools that shape learning environments and influence the development of mathematical literacy, as noted by France et al. (2023). Bernardino (2023) further supports this, noting that the effectiveness of textbooks in fostering mathematical literacy is contingent upon their alignment with educational goals and teaching practices. Our analysis is intended to guide the enhancement of textbooks by demonstrating how well-tailored content can nurture gifted students' abilities to apply mathematical reasoning in varied, practical scenarios, thus preparing them for advanced problem-solving and innovation in their future endeavors. By providing these insights, we aim to assist in the creation of textbooks that are not only more responsive to the needs of gifted learners but also instrumental in their advanced academic and professional preparation.

In the academic field, numerous studies have focused on mathematical literacy, with several specifically addressing the mathematical literacy of gifted students (Albayrak et al., 2023; Karaduman et al., 2023; Leikin, 2021; McAllister & Plourde, 2008; Weiner & Robinson, 1986; Zedan & Bitar, 2017). A significant portion of this research involves textbook analysis, adopting various approaches: some researchers have gathered insights from educators or students who have used these materials (Genç & Erbaş, 2017; Nicol & Crespo, 2006), while others have conducted cross-country textbook comparisons (Conklin, 2004; Charalambous et al., 2010; Yeğit, 2020). Additionally, some studies have analyzed central exam questions (Mutlu & Akgün, 2016; Öztürk, 2020), and a considerable number have scrutinized course materials through the lens of PISA mathematical literacy (Al Cihan, 2023; İskenderoğlu & Baki, 2011; Karataş, 2019; Şaban, 2019; Şirin, 2019; Tarım & Tarku, 2022; Tarku, 2022; Yıldırım, 2019). For example, İskenderoğlu and Baki (2011) found that an 8th grade mathematics textbook predominantly featured questions at levels 1 through 4, with Level 2 being the most common at 47%, leading to a recommendation for the inclusion of higher-level questions. Similarly, Tarım and Tarku (2022) noted a majority of questions set in a "scientific context" and at Level 2, and they recommended a more balanced distribution of question levels in future editions. However, a noticeable gap remains in the literature: there is a lack of studies that specifically examine materials designed for gifted students through the framework of PISA mathematical literacy.

Given the alignment of educational objectives for gifted students with PISA's definition of mathematical literacy, a rigorous evaluation of course materials tailored for these students within the PISA framework of mathematical literacy competencies and domains is imperative. This alignment necessitates a thorough assessment of the course materials to ensure they meet both the advanced cognitive needs of gifted students and the international educational standards. Such evaluations are crucial as they not only verify that the educational content fulfills the complex cognitive requirements of gifted students but also prepare them for future challenges by enhancing their mathematical reasoning and application skills. Considering these factors, the primary goal of this study is to systematically analyze and categorize questions from the "algebra and number theory" module of the High School Mathematics Auxiliary Course Material designed for Science and Art Centers (SACs), aligning them with PISA's mathematical proficiency levels and literacy contexts. This systematic approach aims to ensure that these educational tools effectively contribute to the development of mathematical literacy among gifted students.

To address this central objective, the study seeks answers to the subsequent sub-questions:

1. How are the questions from the "algebra and number theory" module's activity forms in the High School Mathematics Auxiliary Course Material for SACs classified according to PISA's mathematical proficiency levels?
2. How are the questions from the "algebra and number theory" module's activity forms in the High School Mathematics Auxiliary Course Material for SACs categorized based on PISA's mathematical literacy contexts?

METHOD/MATERIALS

In this study, the document analysis technique, a qualitative research method, was employed. Document analysis refers to the systematic examination of written materials (Wach, 2013). Specifically, the questions within the activity forms of the "algebra and number theory" module from the High School Mathematics Auxiliary Course Material for SACs were scrutinized. Initially, the questions in the material were explored and coded. Subsequently, these coded questions were categorized based on the PISA mathematical proficiency levels and mathematical literacy contexts.

Selection of Course Material

In Turkey, the "High School Mathematics Auxiliary Course Material for SACs" was prepared by the General Directorate of Special Education Services and approved by the Board of Education in 2021. This material was specifically designed to guide mathematics teachers in educating students enrolled in SACs and those channeled towards mathematical fields. Given its significance in the education of gifted individuals, this book was chosen for examination to classify its content according to the PISA mathematics proficiency levels and mathematical literacy contexts.

Data Collection

For this study, we examined the questions in the activity forms within the algebra and number theory module of the "SACs High School Mathematics Auxiliary Course Material" used in Turkey. Before initiating the research, we sought and obtained ethical approval from the Çukurova University Ethics Committee Commission.

Data Coding

Researchers independently coded questions pertaining to the subject areas of algebra and number theory within the material. In this coding approach, identifiers were assigned based on the activity number, page number, and question number to ensure clarity in the analysis. For instance, a question marked as number 5 on page 233, stemming from the sixteenth activity, was coded as 16-233-5. This uniform coding method was applied to all 199 questions in the material for the study. After completing the coding, the two researchers compared and analyzed their coding to ensure consistency.

Tools Used for Document Analysis Classification

PISA Mathematics Proficiency Levels: PISA developed a comprehensive six-level proficiency scale that distills data gathered from mathematics test materials. This scale facilitates international comparisons by allowing students' mathematical proficiency to be assessed and grouped into one of these six levels (EARGED, 2010). The levels as determined by PISA in 2003 are detailed in Table 1.

Table 1. PISA Mathematics Proficiency Levels

Proficiency Level	What can a student who has reached this level do?
6	Students at level six can independently derive, generalize, and apply concepts to tackle intricate problems using knowledge from their research and modeling. They seamlessly connect various information sources and representations. These students exhibit advanced mathematical thinking and reasoning. When confronted with novel problems, they strategically approach solutions, showcasing a deep understanding and mastery over symbolic and formal mathematical operations. Furthermore, they can articulate their discoveries, interpretations, and perspectives effectively, highlighting their applicability to specific scenarios.
5	Students at level five can create models for intricate situations, recognizing their boundaries and underlying assumptions. They can select and assess strategies for complex problems related to these models. These students work strategically, utilizing robust thinking, reasoning skills, and relevant mathematical representations. They can introspect, articulate their interpretations, and convey their reasoning to others.
4	Students at level four can effectively use models for complex scenarios, even when needing to make assumptions. They adeptly choose and merge various representations, linking them to real-world situations. They think adaptably with foresight, formulating explanations based on their interpretations. They can communicate their viewpoints and findings to others.
3	Students at level three can execute specific operations, even those involving sequential decisions. They can choose and apply basic problem-solving techniques. These students can decipher and utilize information from various sources, reasoning directly from them. They're capable of creating concise reports detailing their findings and reasoning.
2	Students at level two can interpret straightforward situations without needing skills beyond direct inference. They gather information from a single source and use one representation form. These students can apply basic algorithms, formulas, and procedures. Their reasoning is direct, and their interpretations are based solely on observable results.
1	Students at level one can address questions within familiar contexts, where problems are clearly defined and all required information is provided. They can discern information and execute routine tasks based on clear instructions. They can also carry out operations that follow a singular, straightforward stimulus.

PISA Mathematical Literacy Contexts: PISA organizes the contexts in which mathematical problems are framed into four distinct categories: personal, occupational, societal, and scientific. In the 2018 PISA evaluation, the distribution of mathematical items was evenly spread among these contexts, with each one accounting for 25% of the total. This uniform distribution ensures no single context type overshadows the others (OECD, 2019a). The aforementioned "Contexts" categorization of mathematical literacy as defined by PISA can be seen in Table 2 (OECD, 2010).

Table 2. PISA Mathematical Literacy Contexts and Scopes

Contexts	Scopes	Examples
Personal	This context category encompasses items related to an individual's personal experiences.	It includes situations involving one's family, friends, travels, and recreational activities like games, shopping experiences, and more.
Occupational	This context category pertains to items that individuals might encounter in their occupational lives.	This can range from tasks involving accounting, measurement, managing one's time, calculating costs, to activities related to construction and buildings.
Societal	This context category involves items relevant to community and societal interactions.	Examples include processes like elections, public policies, population strategies, aspects of the national economy, and systems like public transportation.
Scientific	This context involves mathematical applications pertinent to various scientific fields.	It encompasses areas like basic sciences, medicine, studies on climate, space exploration, and more. Additionally, concepts intrinsic to the realm of mathematics itself also fall under this category.

Data Analysis

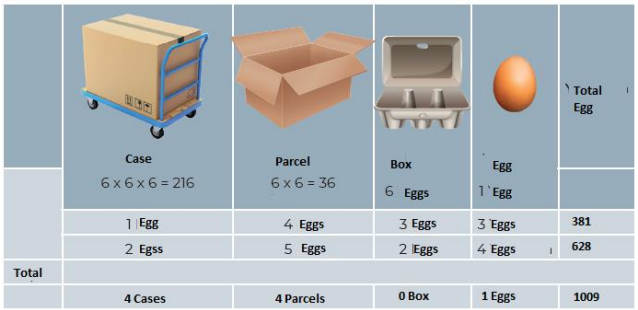
The questions in the activity forms of the algebra and number theory module of the book were firstly solved and then it was determined which skills could be used to reach a solution. These skills were compared with PISA mathematics proficiency levels and the questions were categorized by determining which level they were at. Then, all coded questions were analyzed and classified according to the explanations of PISA mathematics literacy contexts.

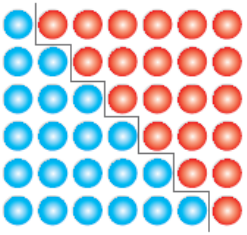
In the study, the questions in the textbooks were classified according to PISA mathematics literacy competency levels and contexts by researchers and three experts who have completed their master's degrees in mathematics education and received training in mathematics literacy. Initially, the researchers classified all the questions according to level and context categories. Following this, tables classified by the researchers and experts were compared, and a meeting was held with the experts and researchers where consensus was reached on questions that were evaluated differently by the researchers in terms of PISA mathematics literacy competency levels and contexts. In this regard, examples and detailed explanations of questions where there was disagreement regarding the PISA mathematics literacy context and level are provided in the Findings section. Additionally, it is explained in detail that two questions were excluded from the evaluation due to their inherent structure preventing the determination of their context and levels. Apart from these two questions, there were no disagreements in classifying the remaining questions in terms of mathematics literacy competency levels. The disagreements occurred in the scientific context category of mathematics literacy contexts. The reason for the disagreements is that some questions were not evaluated within the context of mathematical literacy, but were directly related to the nature of mathematics. A consensus was reached among the researchers and experts, taking into account previous studies (Tarım & Tarku, 2022; Küçükgençay et al., 2021), to include questions directly concerning the nature of mathematics in the scientific context. This decision and its rationale are also discussed in detail in the Findings section.

Analysis of sample questions, coded within the context of PISA mathematical proficiency levels and literacy contexts, along with their solutions are detailed in Table 3.

Table 3. Sample Analysis Explanations in the Framework of PISA Mathematics Proficiency Levels and Mathematical Literacy Contexts, Coded Questions and Solutions

Level	Sample Question	Solution	Level Explanation of the Question	Context
1	13-57-1 Examine whether the following communities indicate a cluster. a. The most beautiful cities in Turkey b. Provinces in Turkey with altitudes exceeding 1000 meters c. The most successful students in our school	A cluster is defined as 'a well-defined collection of varied objects'. The term 'well-defined' implies that we can clearly identify the said objects through our perception, intuition, and reasoning. Essentially, the composition of this collection should remain consistent and not vary from person to person. Everyone should agree on its constituents. As such, while the collections in items a and c don't represent a well-defined set, the collection in item b does.	In this question, the student is tasked with determining whether the groups in the provided items are well-defined. The student is expected to discern information about familiar situations based on given instructions. Given its open-ended nature and the fact that it requires operations based on a single data point, this question falls under the PISA Mathematics proficiency level 1.	Societal
2	8-132-15 	 	In this question, the student is instructed to research the mass of atoms and then convert it into grams using the unit provided in the query. During this conversion to grams, the student needs to arrange the exponents and format them into scientific notation. The task necessitates sourcing information from a singular reference, representing this information in a specific notation, and employing basic calculations. Consequently, this question aligns with the PISA Mathematics proficiency level 2.	Scientific

	4	3
Level		
Sample Question	5-90-7 Gökay can climb a 12-step ladder 1 or 2 steps at a time. How many different ways can he step out?	14-215-14 1 case, 4 parcels and 3 boxes of packaged and 3 unpackaged eggs in the hen house and 2 crates, 5 parcels and 2 boxes of packaged and 4 unpackaged eggs, eggs from the first coop with eggs will be combined. How many crates, parcels and boxes in total used? What is the number of unpacked eggs?
Solution	1 option for step 1 (1) 2 options for step 2 (1+1, 2) 3 options for step 3 (1+1+1, 2+1+1, 1+2) 5 options for step 4 (1+1+1+1+1, 2+1+1+1, 1+2+1, 2+2) 8 options for step 5 (1 step from step 4 and 2 steps from step 3) 13 options for step 6 (1 step from step 5 and 2 steps from step 4) ... There are 233 different options for 12 digits.	
Level Explanation of the Question	In this question, the student must use correct counting techniques per the instructions and correlate the results with the Fibonacci sequence. The question demands the student to integrate different representations and link them to real-world scenarios. Hence, the PISA Mathematics proficiency level for this question is 4.	In this question, the student is asked to be able to make addition in different bases. When the student adds the number of eggs and obtains a number greater than 6, the student is asked to transfer them to the packing unit to the student' s left, write the remainder and multiply it by the digit value to find the total number of eggs. In the question, students are expected to make sequential decisions, interpret, use and reason about representations based on different sources of information. Therefore, the PISA Mathematics proficiency level for this question is 3.
Context	Personal	Occupational

	6	5
Level		
Sample Question	2-39-5 Write and prove the statement whose proof without words is given as follows. 	17-215-13 Create a number system with base 16. Determine the numbers and symbols you need to use and express the equivalent of the numbers given below in different bases in base 16 with the symbols in the number system you have created. a. 300 = b. 12303 = c. $(100111001110101)_2$ =
Solution	Proposition: $1 + 3 + 5 + 7 + \ldots + (2n - 1) = (2n^2)/4 = n^2$ Proof by induction: 1. This proposition becomes $1 = 1^2$ for n = 1. It is trivial. 2. $\forall k \geq 1, S_k \Rightarrow S_{k+1}$ S_k: $1 + 3 + 5 + 7 + \ldots + (2k - 1)=k^2$ S_{k+1}: $1 + 3 + 5 + 7 + \ldots + (2k - 1) + (2k+1)$ $= k^2+(2k+1)=(k+1)^2$	In bases greater than 10, special symbols are used instead of values greater than or equal to 10. In base 16, A is usually used instead of 10, B instead of 11, C instead of 12, D instead of 13, E instead of 14 and F instead of 15. a. 300 = $(12C)_{16}$ b. 12303 =$(300F)_{16}$ c. $(100111001110101)_2 = (4E75)_{16}$
Level Explanation of the Question	In this question, the student must algebraically represent the expression provided through a visual proof and inductively validate it. The student should effectively link various information sources and representations, transitioning seamlessly between them, while showcasing expertise in symbolic operations and mathematical correlations. Consequently, the PISA Mathematics proficiency level for this question is 6.	In this question, the student is tasked with devising a base system other than base 10. Following this, they must convert both base 10 and base 2 into base 16. The question necessitates the student to construct models for intricate situations, select an appropriate strategy, and relate mathematical representations. As such, the PISA Mathematics proficiency level for this question is 5.
Context	Scientific	Scientific

FINDINGS

The primary aim of this research was to classify questions from the activity forms within the algebra and number theory module of the "High School Mathematics Auxiliary Course Material," specifically designed for the Science and Arts Centers. This classification was based on the PISA mathematics proficiency level and mathematical literacy contexts. Table 4 provides a detailed breakdown of the activities present in the algebra and number theory module of the studied material. Additionally, it enumerates the quantity of questions associated with the activity forms of each respective activity.

Table 4. Activity Names and Question Numbers in the Algebra and Number Theory Module of SACs' High School Mathematics Material

Activity Name	Number of Questions
1. Mathematical Logic	5
2. Mathematical Proof Methods	7
3. Clusters	13
4. Relation and Function	10
5. Fibonacci Numbers and the Golden Ratio	9
6. Special Numbers	13
7. Polygonal Numbers	12
8. Exponents	15
9. Rooted Numbers	15
10. Prime Numbers	9
11. Fundamental Theorem of Arithmetic	9
12. Euclidean Algorithm and GCD-LCM	18
13. Divisibility Rules	13
14. Operations on Different Bases	17
15. Language of Computers	-
16. Modular Arithmetic	14
17. Linear Equivalence Systems	12
18. Encryption Techniques	-
19. Equations and Inequalities	8
Total	199

In Table 4, it is evident that the algebra and number theory module of the book comprises 19 activities, with a cumulative total of 199 questions in the activity forms that follow these activities. Among these, the "Euclidean Algorithm and GCD-LCM" activity boasts the most questions, whereas the "Mathematical Logic" activity features the fewest. Notably, the "Language of Computers" and "Encryption Techniques" activities contain sample applications within the activity, but lack any associated activity form. A glance at Table 4 reveals that the distribution of questions in the activity forms varies, suggesting it is not proportionally aligned with the activities.

The first sub-goal of this study aims to categorize questions from the activity forms on algebra and number theory topics within the High School Mathematics Auxiliary Course Material for SACs, based on PISA mathematics proficiency levels. To achieve this, the questions, as outlined in Table 4, were coded and classified in accordance with PISA levels. Table 5 presents the resulting frequency and percentage distributions of the questions across these levels.

Table 5. Frequency and percentage distributions of questions according to PISA mathematics proficiency scale levels

PISA Mathematics Proficiency Levels	f	%
Level 1	10	5.07
Level 2	81	41.11
Level 3	53	26.90
Level 4	18	9.13
Level 5	16	8.12
Level 6	19	9.64
Total	197	100

Upon examining Table 5, it's evident that the distribution of questions in the High School Mathematics Auxiliary Course Material, based on PISA Mathematics proficiency levels, is as follows: first level comprises 10 questions (5.07%), second level has 81 questions (41.11%), third level contains 53 questions (26.88%), fourth level consists of 18 questions (9.13%), fifth level includes

16 questions (8.12%), and sixth level features 19 questions (9.64%). In the book under analysis, level 2 questions are the most prevalent, constituting 41.11%, while level 5 questions are the least common at 8.12%. Despite the presence of questions from all levels in the book, the distribution among the levels is not even.

The second sub-objective of this study aims to categorize the questions in the activity forms related to algebra and number theory topics in the High School Mathematics Auxiliary Course Material for SACs based on PISA mathematical literacy contexts. To achieve this, questions outlined in Table 4 were coded and sorted according to PISA mathematical literacy contexts. Table 6 subsequently presents the frequency and percentage distributions of these questions by context.

Table 6. Frequency and percentage distributions of questions according to PISA mathematical literacy contexts

Contexts Category	f	%
Personal	9	4.56
Occupational	7	3.55
Societal	2	1.01
Scientific	179	90.80
Total	197	100

Upon examining Table 6, it is observed that there are 9 questions (4.56%) in the personal context, 7 questions (3.55%) in the occupational context, 2 questions (1.01%) in the societal context, and 179 questions (90.80%) in the scientific context. While the book contains the fewest questions in the societal context (1.01%), it is heavily dominated by questions in the scientific context (90.80%). Although questions from all contexts are present in the book, their distribution across these contexts is not even.

There are exceptions to the general categorization of contexts. Specifically, in the unique scenario where a unit solely encompasses mathematical structures and doesn't reference any context outside of mathematics, it is categorized under the scientific context (OECD, 2019a). In this research, questions within the scientific context were assessed from two distinct angles: first, as questions that genuinely pertain to a scientific context, and second, as questions that don't explicitly reference any particular context. These latter questions, due to the mathematical structures they embody, are classified as being within the scientific context by default. Out of these, 40 questions can be deemed to be truly situated within a scientific context as they encompass elements tied to scientific and technological mathematical applications. However, the remaining 139 questions solely draw from the realm of mathematical science. A review of the literature reveals that Tarım and Tarku (2022) also bifurcated the scientific context in their research. Conversely, Küçükgençay et al. (2021) labeled questions that solely integrated mathematical structures and excluded scientific or technological mathematical applications as having "no context" in their study. Figure 1 illustrates examples of questions that exclusively derive from the domain of mathematics yet are classified under the scientific context.

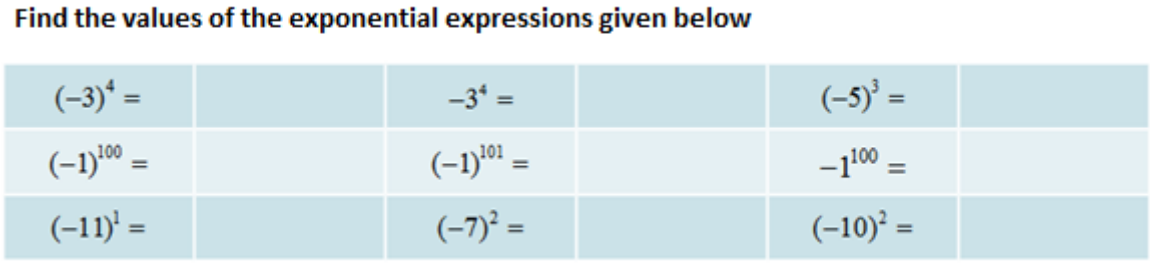


Figure 1. Example of a question classified in a scientific context and containing only mathematical expressions (8-128-3) (Karaaslan ve ark., 2021)

As illustrated in Figure 1, the sample question does not encompass elements related to mathematical practices tied to science and technology. Nevertheless, in this study, such questions were categorized under the scientific context due to their intrinsic alignment with the nature of mathematical science.

In the distribution presented in Table 4, there are 199 questions. Yet, Table 5 and Table 6 indicate that only 197 of them can be classified according to PISA mathematics literacy contexts and PISA mathematics proficiency levels. This discrepancy arises because the context and level of two questions, coded as 16-233-7 and 17-245-10 from Activity 16, Modular Arithmetic, and Activity 17, Linear Equivalence Systems, respectively, could not be pinpointed. Both of these questions pertain to equivalences and are identical, reading: "Devise and resolve a real-life problem where equivalences will be utilized." Given that the resolution to this question is left to the student's discretion, its context would naturally fluctuate based on the student's choice. Furthermore, the question's level might also change depending on the student's interpretation. However, since students are prompted to formulate the question themselves, it might be classified as Level 5. This is attributed to the student's required skills like creativity,

the generation of unique solutions, model development and application in intricate situations, and understanding the respective limitations and assumptions.

In alignment with the primary objective of this study, questions from the activity forms pertaining to algebra and number theory in the High School Mathematics Auxiliary Course Material were categorized based on PISA mathematics proficiency levels and PISA mathematics literacy contexts. Beyond the primary findings, the study further explored if the distribution of questions in the book, as reviewed in the scope of this research, aligned proportionally with the PISA mathematics proficiency levels in relation to the PISA mathematics literacy contexts. In this regard, Table 7 presents the distribution of questions from Table 4, categorized by PISA mathematics literacy contexts and proficiency scale levels.

Table 7. Distribution of PISA mathematics proficiency levels of the questions in the course material according to PISA mathematics literacy contexts

Contexts Category	Level 1	Level 2	Level 3	Level 4	Level 5	Level 6	Total
Personal	1	-	7	1	-	-	9
Occupational	-	3	4	-	-	-	7
Societal	1	-	1	-	-	-	2
Scientific	8	78	41	17	16	19	179
Total	10	81	53	18	16	19	199

In Table 7, the classification of PISA mathematics literacy contexts alongside the PISA mathematics proficiency scale levels reveals specific trends. Within the personal context, only questions from the first, third, and fourth levels are present. The occupational context has questions solely from the second and third levels. The societal context encompasses only the first and fourth level questions. In contrast, the scientific context features questions from all levels. Notably, the fifth and sixth level questions are exclusive to the scientific context, with none found in the personal, Occupational, or Societal contexts. Additionally, the distribution of the questions across the first through fourth levels is not evenly spread among the contexts.

DISCUSSION

In this research, questions from the activity forms within the algebra and number theory module of the High School Mathematics Auxiliary Course Material—developed for SACs—were categorized by PISA mathematics proficiency level and mathematical literacy contexts. A total of 199 questions spanning 19 activities were assessed.

Upon classifying by the PISA mathematics proficiency levels, it was determined that there were 10 questions (5.07%) at level 1, 81 questions (41.11%) at level 2, 53 questions (5.07%) at level 3, 18 questions (9.13%) at level 4, 16 questions (8.12%) at level 5, and 19 questions (9.64%) at level 6. The minimal representation is observed at level 5, while level 2 contains the maximum number of questions. This skew towards level 2 questions aligns with prior research. İskenderoğlu and Baki (2011) analyzed the 8th-grade mathematics textbook and found that nearly 47% of the questions were at level 2. In his study, Şaban (2019) analyzed 954 questions related to the algebra sub-learning area in mathematics and mathematics application textbooks for grades 6-8 according to the PISA mathematics competency scale. He noted that the majority of the questions were at level 2. Similarly, Tarım and Tarku (2022) found that the 8th grade textbooks they reviewed in 2022 predominantly featured questions of the 2nd level. Furthermore, this trend corresponds with Turkey's PISA 2018 mathematics score average (OECD, 2019b). Given that the High School Mathematics Auxiliary Course Material for SACs is intended to provide differentiated and enriched content (Karaaslan et al., 2011), the frequent inclusion of level 2 questions ensures students grasp these nuanced topics comprehensively.

Despite the literature indicating a lack of fifth and sixth-level questions in previously examined books (İskenderoğlu & Baki, 2011; Şaban 2019; Tarım & Tarku 2022), the High School Mathematics Auxiliary Course Material tailored for SACs revealed a significant 17.76% presence of these higher-level questions. Similarly, in their study, Sarıkaya & Yenilmez (2022), when 149 questions and sub-questions in the Secondary School Mathematics Applications textbooks were examined, it was seen that there were 62 questions from the 5th level and 33 questions from the 6th level. Furthermore, Özyaprak (2016) mentioned that when gifted students face questions commensurate with their cognitive capabilities, it promotes active engagement, curiosity, and exploration in mathematics. Wheatley (1983) underscored the importance of striking a balance between computation skills and higher-order thinking for textbooks designed for gifted students. Given that objectives crafted for gifted students are anticipated to be differentiated and enriched, there exists an expectation of a linear association between the question levels and objectives. The inclusion of level 5 and 6 questions in textbooks for gifted students is essential due to their advanced cognitive abilities and the need for challenging educational content. Research highlights the importance of a differentiated curriculum to keep these students engaged and motivated, as the lack of challenging material significantly risks underachievement (Kahveci & Akgül, 2014; Kanapathy et al., 2022). While specific studies on creating high-level questions for gifted students are scarce, the consensus

supports their integration to meet unique educational needs and fully realize learning potential (He et al., 2022). Therefore, it is crucial for textbooks for gifted students to include a significant number of level 5 and 6 questions. Consequently, the presence of levels 5 and 6 questions in this particular book, devised as a guiding tool for instructors of gifted students, aligns seamlessly with the book's mission: facilitating students' mastery of comprehensive, advanced mathematical knowledge, skills, and behaviors, and empowering them to produce correspondingly.

Based on the PISA-defined context categories, it's evident that the majority of questions fall within the scientific context, accounting for 179 (90.80%), while the societal context sees the least representation with only 2 questions (1.01%). The personal and occupational contexts follow with 9 (4.56%) and 7 (3.55%) questions, respectively. This aligns with Tarku's (2022) findings, where the scientific context dominated with 80.6% of the questions, and the societal context was minimally represented at 1.5%. Contrastingly, Küçükgençay et al. (2021) adopted a distinct categorization technique. In their analysis, questions that lacked any discernible links to science and technology-related mathematical applications were labeled as 'no context'. They observed that the majority of the questions fell into this 'no context' category. In our study, a significant 139 questions (70.55%) were bracketed within the scientific context solely due to their affiliation with mathematical science, devoid of any concrete ties to actual science and technology. Conversely, the remaining 40 questions (21.31%) directly connected to scientific and technological themes, solidifying the dominance of the scientific context in our study, a trend that mirrors the broader literature. The majority of questions in the scientific context of the textbook primarily focus on the abstract nature of mathematics (Altun et al., 2004). This focus can lead to a disconnect between the questions and real-life applications, as they often do not align with practical scenarios found in societal, personal, or professional contexts. Therefore, it is advisable to revise these questions to better integrate real-life applications within the scientific framework. Additionally, it is essential to heed PISA's recommendation for a balanced distribution of questions across various contexts (OECD, 2019a), reflecting the diverse problem situations students are likely to encounter in real life. Furthermore, studies by Coştu et al. (2009) and Mutlu & Akgün (2016) have highlighted a significant gap in teachers' understanding of mathematical contexts and their tendency to undervalue these contexts. This gap can hinder students' ability to effectively connect mathematical concepts with real-world problems. To address these challenges, it is crucial for the High School Mathematics Auxiliary Course Material designed for SACs to provide a more equitable distribution of questions across all contexts, ensuring that students receive a well-rounded exposure to diverse mathematical applications. This approach will not only enhance their learning experience but also better prepare them to apply mathematical skills in various real-life scenarios.

CONCLUSION AND RECOMMENDATIONS

When analyzing the distribution of question levels according to their contexts, it becomes apparent that questions at the fifth and sixth levels are solely in the scientific context. Only one question at the fourth level falls under the personal context, with the remainder situated within the scientific domain. This distribution is believed to be because fifth and sixth-level questions inherently embody elements from the realm of pure mathematics. Nonetheless, the presence of merely two questions in the societal context, the absence of questions from each context at every level, and the disproportionate distribution of contexts relative to levels indicate that the course material doesn't align with PISA's emphasized distribution. It seems that while the course material's authors prioritized high-level skills for gifted students, they overlooked the importance of a balanced distribution across contexts. Given these observations, it's advisable for mathematics textbooks, crafted to assist teachers of gifted students, to ensure a balanced question distribution across all levels. Additionally, during textbook creation, there should be a focus on including an adequate number of questions from each context. This ensures that students hone their problem-solving skills by relating mathematics to everyday scenarios. For future course materials tailored for gifted students, an emphasis should be on increasing high-level skill questions while ensuring distribution equilibrium. Additionally, it is suggested that questions in other modules of the High School Mathematics Auxiliary Course Material for SACs be analyzed in light of PISA mathematical literacy components.

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Statements of publication ethics

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

Researchers' contribution rate

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

Ethics Committee Approval Information

Ethics Committee Approval Document of this research was provided by Çukurova University in 24.05.2023 by Ethics Committee for Education and Humanities with number 706949.

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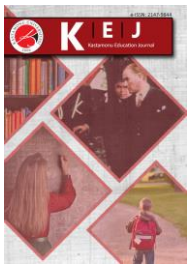

| Research Article / Araştırma Makalesi |

The Use of Mind Mapping Technique in Acquisition of Grammar Structures in Foreign Language Teaching

Yabancı Dil Öğretiminde Dil Bilgisi Yapılarının Kazandırılmasında Zihin Haritalama Tekniğinin Kullanımı[1]

İsmail AYDOĞDU [2], **Semra ALYILMAZ** [3]

Keywords

1. Teaching Turkish as a foreign language
2. Foreign language teaching,
3. Grammar teaching
4. Mind mapping technique
5. Learner's views.

Anahtar Kelimeler

1. Yabancı dil olarak Türkçe öğretimi
2. yabancı dil öğretimi
3. dil bilgisi öğretimi
4. zihin haritalama tekniği
5. öğrenci görüşleri.

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Abstract

Purpose: As in other languages, Turkish also consists of words formed by the combination of sounds and sounds and meaningful integrity formed by the combination of words in a ruleful way. Therefore, it needs some rules for both the formation of sounds, the formation of words and the formation of sentences, which constitutes grammar. In order to learn a foreign language fully and properly, it is necessary to master the rules of grammar. Methods and techniques designed for learning something in the best and shortest time are important and necessary for teaching grammar in foreign language teaching. The aim of this study is to examine the effectiveness of mind mapping technique, which is a different and new technique, in teaching grammar structures in teaching Turkish as a foreign language.

Design/Methodology/Approach: In the study, mind mapping diagrams were used to teach grammar structures in teaching Turkish as a foreign language. According to this diagram, language consists of three components: form, function and use. For this reason, all grammar structures to be explained in the lesson were organized according to these three components and diagrams were prepared. Grammar structures were taught through the diagrams whose instructor opinions were taken. "Interview technique", one of the qualitative data collection tools, was used in the study. For this, a semi-structured interview form was used. At Sakarya University TÖMER, a total of 22 learners at the A2 level were taught with the mind mapping technique for 7 weeks, and then the learners were interviewed one by one with a semi-structured interview form. Content analysis was used to analyze the data. The data obtained through content analysis were divided into themes and sub-themes.

Findings: When the mind mapping technique in teaching grammar structures in teaching Turkish as a foreign language was analyzed according to learner opinions, 5 themes and 23 sub-themes were identified.

Highlights: According to the opinions of the learners, positive results such as the mind mapping technique being effective in grammar teaching, being useful, having a structure that offers ease of teaching as well as contributing to recall and developing a positive attitude towards the lesson were determined.

Öz

Çalışmanın amacı: Diğer dillerde olduğu gibi Türkçe de ses ile seslerin bir araya gelmesiyle oluşan kelimelerden ve kelimelerin kurallı bir şekilde bir araya gelmesiyle oluşan anlamlı bütünlükten oluşmaktadır. Dolayısıyla hem seslerin oluşumu hem kelimelerin oluşumu hem de cümlelerin oluşumu için birtakım kurallara ihtiyaç duymaktadır ki bu dil bilgisini oluşturmaktadır. Yabancı bir dili dili tam ve düzgün bir şekilde öğrenebilmek için dil bilgisi kurallarına hâkim olmak gerekmektedir. Bir şeyin en iyi ve en kısa sürede öğrenilmesi için tasarlanan yöntem ve teknikler yabancı dil öğretiminde dil bilgisi öğretimi için önemli ve gereklidir. Bu çalışmanın amacı yabancı dil olarak Türkçe öğretiminde dil bilgisi yapılarının kazandırılmasında farklı ve yeni bir teknik olan zihin haritalama tekniğinin etkinliğini incelemektir.

Materyal ve Yöntem: Çalışmada yabancı dil olarak Türkçe öğretiminde dil bilgisi yapılarının kazandırılması amacıyla zihin haritalama diyagramları kullanılmıştır. Bu şemaya göre dil; şekil, işlev ve kullanım olmak üzere üç bileşenden oluşmaktadır. Bu sebeple derste anlatılacak tüm dil bilgisi yapıları bu üç bileşene göre düzenlenerek diyagramlar hazırlanmıştır. Öğretici görüşleri alınan diyagramlar üzerinden dil bilgisi yapıları işlenmiştir. Araştırmada nitel veri toplama araçlarından biri olan "görüşme tekniği" kullanılmıştır. Bunun için yarı-yapılandırılmış görüşme formu kullanılmıştır. Sakarya Üniversitesi TÖMER'de A2 seviyesinde toplam 22 öğrenene 7 hafta boyunca zihin haritalama tekniği ile ders anlatılmış ardından yarı yapılandırılmış görüşme formuyla öğrenenlerle tek tek görüşülmüştür. Verilerin analizinde içerik analizi kullanılmıştır. İçerik analizi ile elde edilen veriler tema ve alt temalara ayrılmıştır.

Bulgular: Yabancı dil olarak Türkçe öğretiminde dil bilgisi yapılarının kazandırılmasında zihin haritalama tekniğinin öğrenen görüşlerine göre incelendiğinde 5 tema ve 23 alt tema tespit edilmiştir.

Önemli Vurgular: Öğrenenlerin görüşlerine göre zihin haritalama tekniğinin dil bilgisi öğretiminde etkili, faydalı, öğretim kolaylığı sunan bir yapısının olmasının yanı sıra hatırlamaya katkısını olması ve derse karşı olumlu tutum geliştirmesi gibi olumlu sonuçlar tespit edilmiştir.

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INTRODUCTION

Today, with the developing and changing living conditions, the borders of the states have been removed and replaced by the fields of activity of commercial agreements. These commercial activities have made it compulsory to know and teach foreign languages due to internationalization. Foreign language learning is becoming more and more important, and even knowing a foreign language has become a feature that everyone should have, rather than a privilege (Göçer, 2009). In this respect, teaching Turkish as a foreign language is an area of increasing importance day by day. In this context, we can say that various studies have been carried out to improve the quality of education in teaching Turkish as a foreign language.

Although language consists of the usable integrity of listening, speaking, reading and writing skills (Demirel, 2008), there should be a good grammar education in order to develop these skills (Polatcan, 2014). It is even argued that grammar teaching is a vital component in foreign language teaching (Rossiter, 2021). Aytaş and Çeçen (2010) state that grammar is a field that concerns and covers all of these skills in addition to listening, speaking, reading and writing, which are the basic skills of language.

Korkmaz (1992) explained grammar as a science that examines all units of a language starting from sound and the meaning relations between these units and explains the rules and functioning features related to them. Therefore, grammar is an important and necessary science that examines all the rules of the language starting from its most basic features such as sound and its usage features depending on these rules. Grammar teaching improves learners' comprehension and expression skills. Güneş (2013) emphasizes that grammar is the most important key to producing as well as reading and understanding a text. Especially considering the fact that a language like Turkish, which has very few exceptions, is one of the additive languages, grammar teaching is of great importance (Benhür, 2002).

Wang (2010) in his research emphasizes the importance of grammar in foreign language teaching when he says that grammar plays an important role as a set of rules for selecting words and then putting them together to express meaning. He even states that it is necessary to explore grammar teaching methods and techniques for effective grammar teaching. Instead of learning grammar structures by memorizing them, students are directed to understand and comprehend what they learn (Yoğurtçu, 2009). Thus, what they learn can be meaningful and permanent.

In order to learn a language in the best way, grammar teaching should be diversified, blended with today's technology and new methods and techniques should be used. Because it should not be forgotten that grammar teaching does not only consist of teaching rules. In Demirel's (1999) study, the aims of grammar teaching in line with contemporary developments are listed as follows: to make students comprehend the functioning order of language, to enable students to use language correctly and effectively as a means of communication. Hudson (1992), on the other hand, states the aims of grammar teaching as follows: to build self-confidence in the language by increasing language achievement, to increase the general level of knowledge about the language, and to facilitate the learning of other languages. Banguoğlu (1990) also states that we can get used to more accurate and perfect thinking thanks to grammar. Therefore, grammar teaching should not only be seen as the teaching of the rules of language, but should be seen as one of the most important parts of language. However, the status of grammar teaching in foreign language teaching has weakened and even partially disappeared (Ling, 2015).

Studies support the view that grammar teaching is done in traditional ways, that is, in the ways that our teachers have learned or by sticking to textbooks (Taylor, 1986; Syafiqah Yaccob & Yunus, 2019). However, it is a known fact that it would be wrong to stick to the past and not to go beyond the traditional in education while everything is developing and changing today.

In this study, teaching grammar with mind mapping technique, which is one of the contemporary techniques in teaching Turkish as a foreign language, is discussed. It was investigated whether the mind mapping technique is effective on learners' academic achievement, retention of what is learned and attitudes towards grammar. In the study, the answer to the question "What are the students' opinions about the mind mapping technique in teaching grammar structures in teaching Turkish as a foreign language?" will be sought.

In the information age, education and training activities are developing and diversifying day by day and accordingly, both educational processes and educational programs are differentiated. Various strategies, methods and techniques are used to make education more quality, efficient and enjoyable. In grammar teaching, methods and techniques should be used to help students acquire basic language skills. The traditional teaching and learning process with chalk and talking has lost its validity in the lessons (Syafiqah Yaccob & Yunus, 2019). There are not enough publications and research on the methods to be used in grammar teaching. There is a need for more research, articles and graduate theses in this field (Göçer & Arslan, 2018). With this study, it is thought that both students and instructors will gain a new alternative technique in teaching grammar structures in teaching Turkish as a foreign language.

The fact that new and different methods and techniques cannot be implemented in grammar teaching causes problems in teaching the subjects (Güven, 2013). This study is important in terms of bringing a breath of fresh air to the acquisition of grammar structures that are difficult to teach and learn in teaching Turkish as a foreign language and using it as an alternative technique. In addition, the fact that this technique will be used for the first time in the field of teaching Turkish as a foreign language and that it will be used for the first time in a grammar study in the field of teaching Turkish is another important point of the study. For the reasons mentioned above, the study is expected to contribute to the Turkish literature.

When we look at the theses prepared on grammar teaching, we see that the researches are quite insufficient. Because academic studies are mostly focused on four basic skills (Göçer & Arslan, 2018). Although listening, speaking, reading and writing are the four basic skills in language teaching, it is grammar that will connect them and strengthen their use and expression. In foreign language teaching, it is not possible to use the basic skills of the language effectively and to benefit from the expressive power of the language without learning the grammar structures completely and correctly. Because every language has its own rules and that language cannot be fully learned without learning these rules. According to Özbay (2006), the correct and rapid learning and use of language depends on grammar teaching. Since this situation is the same in teaching Turkish as a foreign language, grammar teaching should be given importance.

In various studies, it has been stated that grammar is the basis of language (Langacker, 2008; Ataboyev & Rustamov, 2023). For this reason, various visual and written activities should be included in the materials to be used in grammar teaching. Mind mapping technique basically consists of diagrams created with colors, pictures and writings. Therefore, in this study, there are mind maps in which grammar structures are combined with various colors, pictures and writings.

In his study, Aydın (1999) found that 93.10% of the teachers concluded that grammar is important and necessary. In their study, Hançer and Dilidüzgün (2021) found that 83.3% of 48 instructors stated that grammar teaching is important. In addition, in various studies conducted on students, it is seen that the subject that students have the most difficulty in language lessons is grammar subjects (Karababa Candaş, 2009; Maden & İşçan, 2011; Gürbüz & Güleç, 2009). However, Mostafa (2021) reveals in his study that mind mapping technique increases grammar achievement.

This study is important for learners of Turkish as a foreign language to learn grammar structures completely and accurately and to minimize rule errors. For learners of Turkish as a foreign language, how grammatical structures are written and pronounced and when and how to use these structures are important rather than their names. The function(s) of the grammar structure is important here. At the point of learning these functions, the mind mapping technique both stays in the memory more with its structure consisting of visuals and establishes a connection between information (Brandner, 2015). In this way, it accelerates learning and facilitates recall (Süğümlü & Sulak, 2019). In addition, Brandner (2019) states that the mind mapping technique summarizes the topics with pictures/photos and keywords, which shows that grammar topics can be learned in a shorter and faster way. Preferring new methods and techniques that appeal to different sensory organs will provide more qualified and more permanent learning, so that the subjects will be better understood (Özbay, 2006).

When the literature was examined, it was seen that although the effectiveness of mind mapping technique in different subjects was examined, there was no study on the acquisition of grammar structures in teaching Turkish as a foreign language. The aim of this study is to answer the question "What is the effect of mind mapping technique on the acquisition of grammar structures in teaching Turkish as a foreign language?" according to student opinions.

METHOD/MATERIALS

Research and Design

Phenomenology, one of the qualitative research methods, was used in the design of the study. Phenomenology is used to determine the common experiences of a group of individuals (Eberle, 2014). In the study, the views of 22 students learning Turkish as a foreign language on grammar teaching with mind mapping technique were determined. The descriptive approach, one of the phenomenology designs, was preferred in the study. In this approach, data are obtained from individuals who have experienced the research subject, provided that they maintain their objectivity (Merriam, 2014). The data obtained were combined under themes and sub-themes (Yalçın, 2022). In this way, information was obtained about the role of mind mapping technique in the acquisition of grammar structures by Turkish as a foreign language learners.

Study Group

The population is a large group of living or non-living beings from which the data needed to answer the questions for a research are obtained (Büyüköztürk et al. 2009). The population of this study consists of A2 level students who learn Turkish as a foreign language. Purposive sampling method was preferred for the sample of the study. Purposive sampling methods are useful in discovering and explaining phenomena and events in many situations (Yıldırım & Şimşek, 2018). In the study, maximum diversity sampling was preferred among purposive sampling methods. The purpose of creating a sample based on maximum diversity is to try to find out whether there are any common or shared phenomena among diverse situations and to reveal different dimensions of the problem according to diversity (Yıldırım & Şimşek, 2018). The quantitative research group of this study consists of 22 learners who learned Turkish at A2 level at Sakarya University TÖMER in the academic year 2022 - 2023. The implementation part of the study started on January 23, 2023 and ended on March 10, 2023. The implementation was carried out in the normal periods determined by the institution and lasted seven weeks.

These study groups were selected from learners whose readiness and language skills were at similar levels, taking into account the course scores obtained from the A1 exam. For this purpose, classes were formed on the basis of the learners' total scores of the A1 exams conducted by the institution and their individual scores according to skills.

Table 1. Demographic Information of the Qualitative Study Group

Participant Information		Experimental Group	
		f	%
Gender	Male	10	45,45%
	Female	12	54,55%
Age	17-20	13	59,09%
	21-25	7	31,82%
	26-30	1	4,55%
	30+	1	4,55%
Education	License	19	86,36%
	Master's Degree	2	9,09%
	PhD	1	4,55%
Countries	Azerbaijan	1	4,55%
	Djibouti	1	4,55%
	Indonesia	3	13,64%
	Ethiopia	1	4,55%
	Palestine	1	4,55%
	Iraq	1	4,55%
	Iran	2	9,09%
	Kazakhstan	1	4,55%
	Libya	1	4,55%
	Egypt	1	4,55%
	Niger	1	4,55%
	Uzbekistan	1	4,55%
	Pakistan	1	4,55%
	Russian Federation	2	9,09%
	Sudan	1	4,55%
	Syria	1	4,55%
	Jordan	1	4,55%
	Yemen	1	4,55%
Total		22	100

Table 1 shows that there are 12 female and 10 male learners. There are 13 learners between the ages of 17-20, 7 learners between the ages of 21-25, 26-30 and 30+. It is seen that 19 of the participants will receive undergraduate, 2 master's and 1 doctorate education. It is seen that the majority of the participants are from different countries (18 different countries) and the highest number of students is from Indonesia with 3 participants. There are also two participants each from Iran and Russia. The other participants are from different countries with one participant each.

Data Collection Tools and Data Collection Process

The data were collected at the end of the course in the A2 level class learning Turkish as a foreign language. "personal information form" and "mind mapping technique semi-structured interview form" were used as data collection tools. In line with the purpose of the study, the research question was organized as follows: "What do you think about the use of mind mapping technique in teaching grammar structures in teaching Turkish as a foreign language?" The data were obtained in writing through these forms in approximately one class hour (40 minutes).

Data Analysis

“Content analysis” was used to analyze the data obtained. Content analysis is the systematic analysis of written and oral materials (Balcı, 2018). Content analysis can be used to analyze visual and verbal data (Harwood & Garry, 2003). Content analysis is a rich source of data with the potential to reveal valuable information about specific phenomena in texts (Kondracki, Wellman, & Amundson, 2002). In order to make the research more concise and meaningful by bringing together similar content and information, the information revealed in the content analysis was divided into codes, categories and themes and subjected to re-analysis. Corbin and Strauss (2008) define coding as the categorization of data into various headings by taking into account certain characteristics. The coding process starts with conceptualization (Özdemir, 2010). Then the category obtained from the codes is determined. It is quite difficult to determine categories. In addition, themes related to the categories can be written on the other side of the categories to analyze the interviews (Büyüköztük, et al. 2016). For this reason, themes were first identified and then interrelated sub-themes were identified. In this way, themes and sub-themes were created. Sub-themes were combined according to the participants' statements and the same statements increased the frequency value of the sub-theme. These are shown in Table 2. Within the scope of the research, themes and sub-themes were not planned in advance. Themes and sub-themes were drafted.

Validity and Reliability of the Data

In analyzing the data collected from the students, it is important to analyze the similarities and differences in both surface and deep structures correctly. For this purpose, two researchers examined and analyzed the texts separately in coding the themes and sub-themes. After the researchers completed the coding, they came together and disagreements were observed. Different opinions may emerge in the analysis of qualitative data. This is a natural situation. In such cases, researchers are expected to reach consensus on themes and sub-themes (Miles & Huberman, 1994). Validity and reliability in qualitative studies are slightly different from quantitative studies. The validity and reliability of the study are explained by the reliability of the researcher, the accuracy of the results and the expertise of the research (Krefting, 1991). Although they are experts in the field of research and in the field, draft themes and sub-themes were sent to 3 more experts to test the accuracy of the data. In case of disagreement between the experts, they were asked to reach a consensus again. In this way, the final version of the data obtained within the scope of the research was formed with the opinions of two researchers and two external experts.

FINDINGS

When the data obtained according to the opinions of the learners in the study were analyzed, the teaching features of grammar structures with the mind mapping technique were grouped under the following themes and sub-themes as shown in Table 2.

Since all of the learners found the technique effective in teaching grammar structures, similar expressions were given only once. However, the frequency value was increased each time the same statement was repeated. The frequency values of the themes and sub-themes were determined in this way.

Table 2. The Effect of Mind Mapping Technique on the Acquisition of Grammar Structures in Teaching Turkish as a Foreign Language

Themes and Subthemes	*f*
Being Effective in the Acquisition of Grammar Structures	48
Since grammar structures are given in an organized way on the diagram	9
Because it is so amenable to repetition	8
As it gives all the information about a grammar structure in a diagram	7
Because there are many examples and exceptions in the diagrams	6
Because diagrams are simple but detailed information	5
For not enabling faster note-taking	4
Because the colorful structure and branches of the technique are effective in learning	4
Because it is fast and easy to understand	3

Because the mind mapping technique is fun	2

When the table is examined, 9 sub-themes belonging to the theme of being effective in the acquisition of grammar structures were identified. These are: grammar structures are given in a regular way in diagrams (9), it is suitable for the repetition of the lesson (8), it gives all the information about the grammar structure in a diagram (7), there are many examples and exceptions in diagrams (6), there is simple but detailed information in diagrams (5), it is not necessary to take notes quickly (4), the colorful structure of the technique and the branches are effective in learning (4), it is fast and easy to understand (3), mind mapping technique is fun (2).

Table 3. The Benefit of Mind Mapping Technique on the Acquisition of Grammar Structures in Teaching Turkish as a Foreign Language

Themes and Subthemes	*f*
Being Useful in the Acquisition of Grammar Structures	30
Useful for faster learning	13
Useful because it has a planned narrative	11
Useful for taking notes on diagram	6

When the table is examined, it is stated that it is useful in terms of faster learning (13), having a planned narration (11) and taking notes on diagrams (6).

Table 4. Mind Mapping Technique facilitates the acquisition of grammar structures in teaching Turkish as a foreign language

Themes and Subthemes	*f*
Being Useful in the Acquisition of Grammar Structures	35
Maps provide easy and fast learning	14
How to write their topics, examples and exceptions	9
For the use of different colors and short information	7
Because it is explained in a simple and organized way	5

The table shows that there are four sub-themes that enable students to learn easily. These are; the maps provide easy and fast learning (14), the topics, examples and exceptions are written and explained separately (9), the use of different colors and short information (7), and a simple and organized narrative (5).

Table 5. Contribution of Mind Mapping Technique to Recall in Acquisition of Grammar Structures in Teaching Turkish as a Foreign Language

Themes and Subthemes	*f*
Contribution to Recall in the Acquisition of Grammar Structures	40
For easy recall	22
Because it reduces forgetting	10
As the topics are memorized on the diagram like a photograph	4
As different colors and branches are used	4

When the table is analyzed, it is seen that all of the learners stated that the technique facilitated recall. Apart from this, there are (10) learners who stated that it reduced forgetting, (4) learners who stated that it helped memorization by taking the subjects on the diagram like a photograph, and (4) learners who stated that the use of different colors and branches was effective in remembering.

Table 6. The Effect of Mind Mapping Technique on Class Participation in Acquisition of Grammar Structures in Teaching Turkish as a Foreign Language

Themes and Subthemes	*f*
The Effect of Lesson Participation on the Acquisition of Grammar Structures	22
Because the lessons are very fun and easy	11
Since the examples are mostly given by learners	7
Because it is relaxing to learn subjects easily	4

When the table is analyzed, it is seen that 3 sub-themes emerged. These are: 11 frequency values for the lessons being very fun and easy, 7 frequency values for the examples being mostly given by the students and 4 frequency values for the subjects being easy to learn.

DISCUSSION AND CONCLUSION

When analyzed according to learner opinions about the mind mapping technique in teaching grammar structures in teaching Turkish as a foreign language, 5 themes and 23 sub-themes were identified. It was determined that there were 175 frequencies belonging to these themes and sub-themes.

The first theme identified in the research is the effect of mind mapping technique on the acquisition of grammar structures in teaching Turkish as a foreign language. In this theme, 9 sub-themes were identified. These are: grammar structures are given regularly on the diagram, it is very suitable for repetition, all information about a grammar structure is given in a diagram, there are many examples in the diagrams and there are no exceptions, the diagrams contain simple but detailed information, there are many examples in the diagrams and there are exceptions, the diagrams contain simple and detailed information, it provides faster note-taking, the colorful structure of the technique and it is effective in branch learning, it is fast and easy to understand, the mind mapping technique is fun. When the literature was examined, many studies were found that the mind mapping technique is effective when used in lessons (Aslan, 2006; Aydın, 2009; Tağa, 2013). Ede (2012) in his research on the effect of mind mapping technique on students' comprehension of Turkish reading texts, Uysal (2018) in his research examining the story writing skills of primary school 4th grade students with mind mapping method, Aksoy (2022) in his research examining the effect of mind mapping technique on reading comprehension and summarization skills of primary school 3rd grade students found the mind mapping technique more successful.

The second theme identified in the research is that the technique is useful for the acquisition of grammar structures in teaching Turkish as a foreign language. In this theme, 3 sub-themes were found: it is useful for faster learning, it is useful because it has a planned narration and it is useful for taking notes on the diagrams. When the literature was examined, it was seen in different studies that the mind mapping technique was beneficial to the learners (Kan, 2012; Çelik, 2016). Fiktorius (2013) concluded that the mind mapping technique was effective in the success of learners in his study conducted in EFL classrooms. Fitriani (2015) states that using the mind mapping technique to improve tenth grade students' language knowledge was found successful.

The 3rd theme in the study is the easy acquisition of grammar structures in teaching Turkish as a foreign language with mind mapping technique. In this theme, 4 sub-themes were found. These themes are maps provide easy and fast learning, showing how to write the topics, examples and exceptions, using different colors and short information, explaining in a simple and organized way. In the literature, there are various studies showing that mind mapping technique facilitates teaching in different fields (Şeyihoğlu & Kartal, 2010).

It was determined that the mind mapping technique has an effect on recall in the acquisition of grammar structures in teaching Turkish as a foreign language. In 4 sub-themes, it was concluded that it has an effect on recall by providing easy recall, reducing forgetting, keeping the subjects in mind like a photograph on the diagram, and using different colors and branches (Farrand, Hussain, & Hennessy, 2002; Çamlı, 2009; Gömleksiz & Fidan, 2013; Harbi, 2013; Bawaneh, 2018; Normawati, 2020; Serevina & Heluth; 2022).

In the fifth and final theme of the research, the effect of mind mapping technique on lesson participation in teaching grammar structures in teaching Turkish as a foreign language is seen. 16 out of 22 learners (72.64 in %) stated that their participation in the lesson increased. In the sub-themes, it was stated that the lessons were very fun and easy, the examples were mostly given by the learners and the individuals who learned the subjects easily participated in the lesson comfortably. It is seen in different studies that mind mapping technique develops positive attitudes towards the lesson (Trevino, 2005; Hariri & Tahiri, 2013; Olufunke & Blessing, 2014; Mahasneh, 2017; Aljaser, 2017; Saed & Al-Omari; 2017; Al Kamli, 2019).

RECOMMENDATIONS

In the research, it is seen that the mind mapping technique is liked by the learners in teaching grammar structures in teaching Turkish as a foreign language. For this reason, grammar teaching can be done with mind mapping technique not only for A2 level but also for other levels.

Since the mind mapping technique is basically a note-taking technique, it can be the subject of research not only in grammar teaching but also in other skills and fields of study. Thus, it can be investigated whether it is suitable for other skills or fields of study.

When the results of the research are examined, it is seen that the mind mapping technique in teaching Turkish as a foreign language is effective in both academic achievement, retention and attitude. It was determined that it was successful in the field. Since this technique, which is successful in the field, is basically a note-taking technique, it can be investigated in other skills and fields of study in teaching Turkish as a foreign language. Thus, it can be determined whether it is suitable for other skills or fields of study.

All grammar structures created with the mind mapping technique can be uploaded to a website that will be created with interdisciplinary studies with the funds received from various project support funds. In fact, a program can be prepared in which teachers and learners can create their own mind maps, and a site can be created in such a way that these can be open to sharing.

According to the results of the research, this technique, which is successful in teaching Turkish as a foreign language, can be used by the instructors of the field in grammar teaching. After reviewing the textbooks and related literature and taking into

account the situation of the learners, the instructors can prepare their own course materials with the mind mapping technique for their own lectures or they can train the learners on the mind mapping technique and ask them to make their own diagrams during the lectures.

In teaching Turkish as a foreign language, in addition to academic success, retention and attitude mind mapping, which was found to contribute positively in this research. technique can be used in the grammar sections of textbooks.

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Statements of publication ethics

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

Researchers' contribution rate

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

Ethics Committee Approval Information

As of 2020, researchers applying are required to upload the Ethics Committee Approval Document. Such information as institution name, date, number, etc. regarding the "Ethics Committee Approval Document" should be presented here.

Ethics committee permission was received from Bursa Uludağ University Educational Sciences Institute Directorate on 14.03.2023. Number: E-20585590-302.08.01-10436

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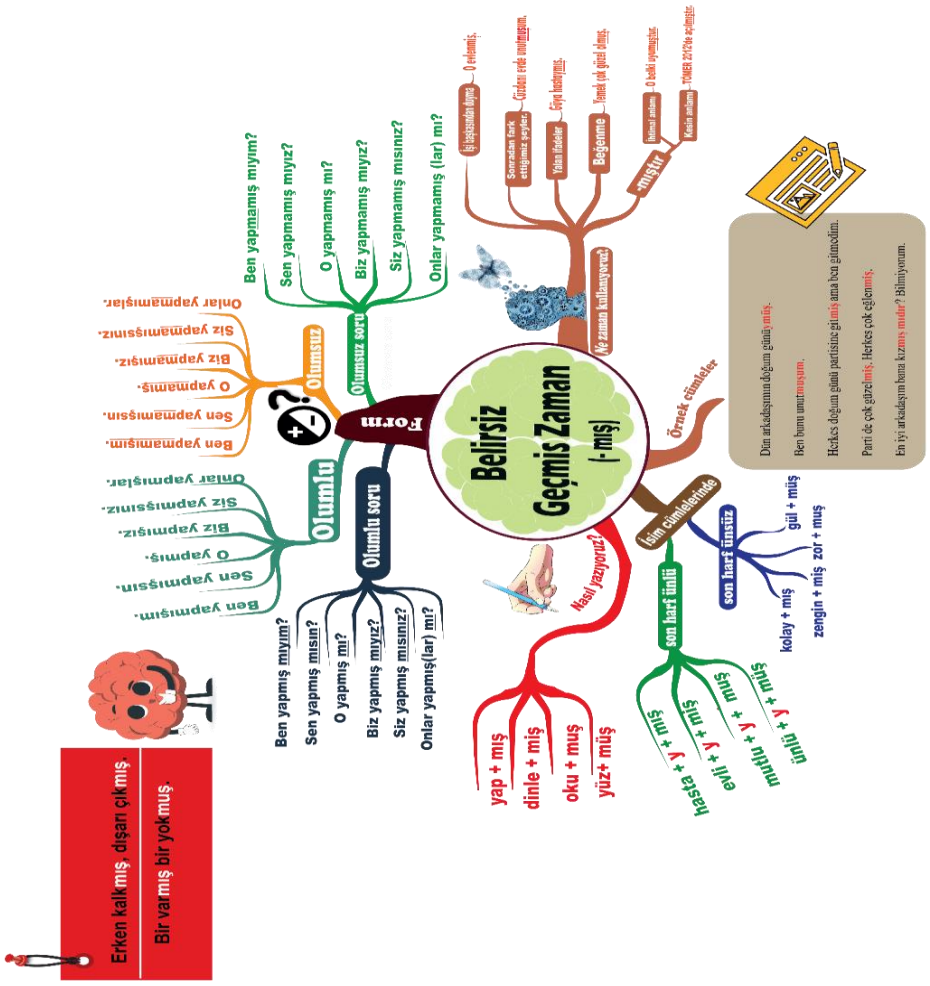
ANNEX 1: Diagram Example Prepared with Mind Mapping Technique



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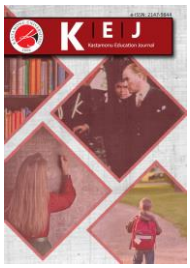

| Research Article / Araştırma Makalesi |

The Corrosive Effect of School Administrators as Toxic Leaders on Teacher Accountability

Toksik Lider Olarak Okul Yöneticilerinin Öğretmen Hesap Verebilirliğindeki Yıpratıcı Etkisi[1]

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Keywords
1. Toxic leadership
2. School administrator
3. Teacher accountability

Anahtar Kelimeler
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2. Okul yöneticisi
3. Öğretmen hesap verebilirliği

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Abstract

Purpose: To examine teachers' views on the corrosive effect of toxic leadership behaviours of school administrators on teacher accountability.

Design/Methodology/Approach: The study group of this research, which uses phenomenology as a qualitative research design, was selected using maximum variation sampling method, which is a type of purposive sampling. This group consists of 20 teachers working in 10 public schools in the central district of Isparta. Data were collected from the teachers through a semi-structured interview form. The collected qualitative data were subjected to contextual analysis through MAXQDA software and visualised. The findings show that the majority of teachers reported that toxic leadership has a detrimental effect on teacher accountability.

Findings: Toxic leaders, characterised by behaviours such as micromanagement, lack of empathy, and aggressive communication, were found to cause teacher demotivation, alienation, and professional burnout. In addition, toxic leaders erode teacher accountability by creating a negative and insecure organisational climate.

Highlights: Toxic leadership behaviours of school administrators are a critical factor that significantly affects teacher accountability. The various dimensions of this impact are as follows: Decreased teacher motivation, psychological safety and job satisfaction, decreased performance and productivity, impeded professional development, stress and burnout. In addition to these, toxic leadership has a negative impact on school climate. A negative school climate leads to a decrease in teachers' willingness to cooperate and be accountable. This can also negatively impact student achievement because lack of co-operation and support among teachers reduces the quality of education. Therefore, it is important for school administrators to exhibit more positive and supportive leadership behaviours to increase teachers' motivation and strengthen their accountability.

Öz

Çalışmanın amacı: Okul yöneticilerinin toksik lider davranışlarının öğretmen Hesap verebilirliğindeki aşındırıcı etkisine ilişkin öğretmen görüşlerini incelemektir.

Materyal ve Yöntem: Nitel araştırma deseni olarak fenomenolojiyi kullanan bu araştırmanın çalışma grubu, amaçlı örneklemenin bir türü olan maksimum çeşitlilik örnekleme yöntemi kullanılarak seçilmiştir. Bu grup Isparta'nın merkez ilçesindeki 10 devlet okulunda görev yapan 20 öğretmenden oluşmaktadır. Öğretmenlerden yarı yapılandırılmış görüşme formu aracılığıyla veriler toplanmıştır. Toplanan nitel veriler, MAXQDA programı aracılığıyla içeriksel analize tabi tutularak görselleştirilmiştir. Bulgular öğretmenlerin çoğunluğunun toksik liderliğin öğretmen hesap verebilirliği üzerinde zararlı bir etkisi olduğunu bildirdiğini göstermektedir.

Bulgular: Mikro yönetim, empati eksikliği ve agresif iletişim gibi davranışlarla karakterize edilen toksik liderlerin öğretmenlerde motivasyon eksikliği, yabancılaşma ve mesleki tükenmişlik gibi olumsuzluklara neden olduğu tespit edilmiştir. Ayrıca toksik liderlerin olumsuz ve güvensiz bir örgüt iklimi oluşturarak öğretmen hesap verebilirliğini aşındırdığı belirtilmiştir.

Önemli Vurgular: Okul yöneticilerinin toksik liderlik davranışları, öğretmenlerin hesap verebilirliğini önemli ölçüde etkileyen kritik bir faktördür. Bu etkinin çeşitli boyutları şu şekildedir: Öğretmen motivasyonunda azalma, psikolojik güvenlik ve iş tatmini, performans ve verimlilikte düşüş, profesyonel gelişimin engellenmesi, stres ve tükenmişlik. Bunlara ek olarak toksik liderlik, okul iklimini olumsuz yönde etkilemektedir. Olumsuz bir okul iklimi, öğretmenlerin iş birliği yapma ve hesap verebilir olma isteklerini azaltmaya sebep olmaktadır. Bu durum öğrenci başarısını da olumsuz etkileyebilmektedir, çünkü öğretmenler arasında iş birliği ve destek eksikliği, eğitim kalitesini düşürmektedir. Bu nedenle, okul yöneticilerinin daha olumlu ve destekleyici liderlik davranışları sergilemeleri, öğretmenlerin motivasyonunu artırmak ve hesap verebilirliklerini güçlendirmek için önem arz etmektedir.

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INTRODUCTION

Education is one of the most important forces shaping the future of societies and this power is realized through the devoted work of teachers working in schools (Cemaloğlu & Özdemir, 2019). The sustainability of dedication and commitment largely depends on the leadership style of school administrators. Leaders are individuals who directly affect the spirit and culture of the school and the professional lives of teachers (Turan, 2020). However, in addition to leaders who influence and develop positive behaviors, there are also leaders who undermine them. In the literature, such leaders are called toxic (Çelebi et al., 2015). Toxic leaders prevent employees from being creative by exerting strict control over them (Dogan and Aslan 2024). By controlling communication and information networks, they encourage abstraction, suspicion and an unhealthy organizational environment (Orunbon & Ibikunle, 2023). By preventing the formation of good relationships between people, they reduce productivity and cause employees to disengage both from the organization and from each other (Klahn Acuña & Male, 2024). In other words, toxic leadership can have a corrosive effect on the entire education system (Dahlan et al., 2023). One area where toxic leadership has a particularly corrosive effect is teacher accountability. Teacher accountability is one of the most fundamental building blocks of an educational institution (Baidoo-Anu & Ennu Baidoo, 2024). Teachers' adherence to professional standards and providing students with the highest quality education is a result of their accountability (Jena, 2023). However, toxic leadership behaviors of school administrators can erode teachers' commitment to fulfilling these responsibilities (Rosenblatt & Wubbels, 2021). In such an environment, teachers may show weakness not only in fulfilling their duties but also in their responsibilities towards their students.

Educational administration and leadership studies have generally focused on positive leadership models, effective management strategies and factors that increase teacher motivation, but the effects of destructive leadership behaviors such as toxic leadership on teachers have not been sufficiently examined. By focusing on the dark side of leadership behaviors, this study reveals how toxic leadership undermines teacher accountability in educational institutions and its negative effects on the quality of education. By raising awareness of how negative behaviors exhibited by leaders, especially in the field of education, can erode teachers' professional accountability, this study shows that leadership behaviors have long-term effects not only on teachers but also on school climate and student achievement in general. At this point, the study not only makes a theoretical contribution to the educational administration literature, but also raises awareness of the need to reassess leadership behaviors in practice.

Toxic Leadership

Today, the concept of leadership is predominantly portrayed with a positive connotation (Gündüz & Dedekorkut, 2014). However, it is important to understand that leaders are not infallible heroes who positively guide their stakeholders without making any mistakes. This is because leaders may at times exhibit negative behaviors or make critical mistakes that jeopardize the interests of the majority. Recognizing this reality, some scholars have moved away from idealized portrayals of heroic leaders and have begun to view leadership from a more comprehensive perspective, including the negative aspects of leadership (Eliveren et al., 2023). Various studies examining manipulative, destructive and toxic leadership behaviors that lead to negative outcomes shed light on the darker sides of leadership, especially as it concerns individuals and groups (Çelebi & İlhan, 2020).

The beginnings of the toxic leader concept are attributed to Dr. Marcia Lynn Whicker, who first introduced it in her 1996 analysis and categorized leadership in organizations into three types: trustworthy, transient and toxic. Whicker (1996) characterizes toxic behaviors of leaders as complaining, vindictive, restless and malicious. Jean Lipman-Blumen later expanded the concept by suggesting that certain leaders exhibit toxic tendencies (Heppell, 2011). According to Lipman-Blumen (2005), toxic leaders are those whose destructive behavior and dysfunctional personality traits cause serious and lasting harm to individuals, organizations, and even the nations they lead. According to him, toxic leaders are managers who do not adopt constructive feedback, encourage approval instead of critically evaluating the leader's judgments and behaviors, and thus harm employees. Flynn (1999) adds that toxic leaders are rude and cruel and exhibit characteristics such as speaking loudly to stakeholders and engaging in hurtful and repulsive behavior.

Toxic school leaders exhibit an authoritarian leadership style that focuses on control rather than collaboration (Dahlan et al., 2023). This approach stifles creativity and discourages open communication, preventing the development of a supportive learning community. Toxic leaders engage in favoritism, giving undue preference to certain individuals or groups (Klahn Acuña & Male, 2024). This not only leads to resentment among staff, but can also undermine the principles of fairness and equity within the educational institution. Micromanagement is also seen as a common feature of toxic leadership (Lipman-Blumen 2005). Constant interference in the duties of teachers and staff leads to a culture of insecurity. Since educators may feel overwhelmed and demoralized, their professional development will be negatively affected. Toxic leadership occurs as a result of a lack of empathy, and this lack leads the leader to disregard the feelings and needs of others, creating insecurity and stress in the work environment. As Schmitd (2008) points out, toxic leaders tend to ignore stakeholders, lack empathy, and do not prioritize their individual needs, which leads to a loss of organizational trust. In these organizations, it is claimed that individuals who accept everything without question are rewarded, while those who approach things critically, think differently and have creative personality traits are punished by being removed from important positions (Drucker & Ito, 2005). According to Lipman-Bluman (2005), toxic leaders expose their followers to humiliation, do not support them, demoralize them, instill fear, take away their rights, limit their abilities and engage in unethical behavior. In addition, they force stakeholders to submit to their authority through threats and withhold

information. Such harmful effects of leaders not only prevent the organization from achieving its goals but also harm its stakeholders (Dahlan et al., 2023).

Research on toxic leadership shows that the negative behaviors exhibited by toxic leaders have detrimental effects on both the work environment and the organizational climate, affecting stakeholders' organizational commitment and trust (Lipman-Blumen 2005). In other words, there is a direct relationship between the negative leadership attitudes exhibited by managers and the level of organizational trust among employees. In addition, the level of organizational commitment among stakeholders also plays a role in shaping the organizational trust environment. Toxic leadership behaviors displayed by managers not only impact the organizational trust perception of the staff, but also reduce the overall level of organizational trust by eroding organizational commitment (Bozkurt et al., 2020). Toxic leadership behavior reduces the productivity of teachers and negatively impacts the benefit dynamics in organizations (Dahlan et al., 2023). This, in turn, can lead to increased absenteeism and anxiety levels, leading to below-average performance and eventually to the disengagement of education stakeholders.

Teacher Accountability

As a requirement of a global and social system, accountability plays an important role in ensuring success in organizations. For this purpose, various accountability policies targeting schools, teachers, administrators or students have been formulated and implemented (Erdağ, 2020). O'Day (2002, p.294) categorized accountability as managerial/bureaucratic, legal, professional and market accountability. Cendon (2000) defined it as political, managerial, professional and democratic accountability. Political accountability involves responsibility in public administration, extending hierarchically up to government leaders and involving the obligations of governments to parliament. Managerial accountability refers to accountability to senior management or external stakeholders for compliance with legal regulations. Professional accountability is linked to adhering to the norms and rules of a particular professional group and performing in accordance with professional standards. Democratic accountability is defined as direct responsibility to the public and fulfillment of the duty of proactive transparency towards citizens (Cendon, 2000, pp.28-42). Rosenblatt (2017) conceptualized teacher accountability not only as an attempt to comply with external demands and expectations, but also as a two-dimensional subjective reality that encompasses teachers' professional competence, professional development needs, and professional ethics. Research shows that the concept of accountability is an important factor for organizations as it shows that employees' sense of responsibility affects their well-being, motivation and performance (Erdağ, 2020).

Hoy and Miskel (2010) base accountability in education on three basic principles: (1) Schools should be held accountable for high standards of performance; (2) Schools should be supported to strengthen their capacity to deliver quality education and (3) Schools should improve the rate and quality of performance outcomes, especially student outcomes. Education institutions have defined the accountability framework to include decisions on student performance, inputs and outputs, and various tools and methods to improve achievement in line with the goals set by school staff. In addition, the concept of accountability in education includes all activities, decisions, in-service courses, educational initiatives, and methods and techniques used to increase student achievement in line with the mission and vision of the school (Himmetoğlu et al., 2017; Kalman & Gedikoğlu, 2014; Yıldırım & Yenipınar, 2019). Accountability is often characterized as a process centered on results and outcomes (Türkoğlu, 2015). Therefore, as schools and teachers strive to achieve success by using state resources, they should be scrutinized according to the progress levels of their students. Thus, it is widely believed that an increase in the perception of accountability in schools is associated with an increase in overall achievement (Himmetoğlu et al., 2017). According to Ingersoll and Collins (2017), considering that teachers are the main actors in school processes, teacher accountability is of great importance. Although each school has its own characteristics, it is an undeniable fact that teachers, as the individuals who are in the closest communication with students, actively shape the classroom environment and assume many responsibilities (Şişman, 2011). The teacher is usually solely responsible for the students in the classroom. Therefore, they are not directly accountable for their behavior and performance. Therefore, it is important for teachers to be accountable for their actions.

Contemporary accountability practices aim to ensure that schools meet the expectations of academic performance mandated by law, bureaucracy and professional standards. They are tasked with establishing the necessary mechanisms, ensuring their functioning and improving student outcomes. The ultimate goal is to change teacher behavior to increase effectiveness and efficiency, thereby improving overall school outcomes, especially student academic performance. In this framework, accountability is seen as both external performance expectations placed on teachers and internal systems designed to support teachers' intrinsic motivation and teaching skills (Erdağ, 2020). Teachers not only transfer knowledge, but are also responsible for students' individual development, academic achievement and social skills (Baidoo-Anu & Ennu Baidoo, 2024). In fulfilling these responsibilities, accountability requires teachers to adopt student-centered approaches and adhere to professional ethics (Jena, 2023). This approach builds transparency and trust in educational processes, while also improving the quality of education provided to students (Gore et al., 2023). Teacher accountability is one of the key elements that determine not only individual teaching practices, but also the effectiveness and efficiency of an entire education system.

The Relationship between Toxic Leader Teacher Accountability

Educational organizations are institutions where human interaction is deeply felt. In such situations, leaders recognize the psychological and social needs of individuals and try to meet these needs (Şişman, 2014). For this reason, effective leadership in

education is crucial in fostering a positive and productive learning environment. However, when leadership becomes toxic, its repercussions can be felt by the entire education system. Toxic leadership is characterized by behaviors and practices that harm the well-being of an organization and its members (Heppell, 2011). In the educational context, toxic leaders may exhibit characteristics such as micromanagement, lack of transparency, favoritism, and failure to provide support and resources. When these characteristics are prevalent in educational leadership, the negative impact on teacher accountability becomes evident (Lipman-Blumen 2005). One of the primary effects of toxic leadership is the erosion of trust within the school community. When teachers feel that their leaders do not have their best interests at heart or that their efforts are not valued, a culture of distrust can permeate the organization. In such an environment, collaboration and open communication are inhibited, making it difficult for teachers to take ownership of their roles and be held accountable for student outcomes (Cendon, 2000). Toxic leaders often resort to fear-based management strategies, creating an atmosphere where teachers are motivated by fear of retaliation rather than a genuine commitment to student achievement (Heppell, 2011). This fear-based approach to accountability can lead to a culture of compliance rather than continuous improvement. Teachers may hesitate to take risks or implement innovative teaching methods for fear of negative consequences if their efforts are not aligned with the narrow expectations set by toxic leaders (Elmore, 2005). Teacher accountability is closely linked to continuous professional development. However, toxic leadership tends to prioritize budget constraints over investing in educators' growth and development (Baidoo-Anu & Ennu Baidoo, 2024). When opportunities for professional development are limited, teachers may struggle to stay up-to-date with best practices, hindering their ability to adapt to evolving educational standards and methodologies (Himmetoğlu et al., 2017). In general, most government reform initiatives that seek to make schools more accountable assume that principal leadership plays a key role. This paper therefore examines how toxic leadership undermines teacher accountability and thus the quality of education provided to students.

Purpose of the Research

The main purpose of this study is to investigate the detrimental effects of school administrators on teacher accountability in the context of toxic leader behavior according to teachers' views and to explore its corrosive impact on teacher accountability with the aim of identifying factors that contribute to improving educational outcomes and potential mitigating strategies. In line with this main purpose, the study sought to answer the following questions;

1. What is the relationship between toxic leadership and teacher accountability?
2. Are school administrators a toxic leader?
3. What is the impact of toxic leader behaviors on teachers?
4. What are teachers' perceptions of teacher accountability?
5. What is the role of toxic leader in teacher accountability?
6. What strategies can be implemented to reduce the corrosive effect of toxic leaders on teacher accountability?

METHOD/MATERIALS

Research Design

Survey model approach was used in the research. This type of research method is typically used to capture the characteristics of a particular situation or event in its current state or as it was in the past. The aim, as stated by Karasar (2006), is to provide a detailed and accurate description of the subject within its natural context. In addition, the study adopted a qualitative research methodology, which was chosen for its effectiveness in providing a comprehensive and nuanced understanding of the topic under study. Phenomenological design, a subset of qualitative research methods, was used in the study. Phenomenology generally focuses on phenomena that are familiar to us but do not have an in-depth and comprehensive thought structure. It is useful in investigating issues that are completely unknown but all their consequences and meanings cannot be fully grasped. The primary data sources in phenomenological studies, as defined by Yıldırım and Şimşek (2008), are individuals or groups who have directly experienced the subject or have the ability to express the subject clearly.

Universe/ Sample

This study was conducted with a total of 20 teachers working in 10 Anatolian high schools in Isparta Central District in the 2023-2024 academic year. The sample of the study was formed by purposeful criterion sampling method from the teachers of ten Anatolian high schools who volunteered for the research (Kıral & Kepenekçi, 2018). The reason for choosing purposive criterion sampling is that the students participating in the study have knowledge and experience related to the subject. Therefore, it is thought that their contribution to the research is significant. The demographic characteristics of the teachers participating in the study are given in Figure 1. and Figure 2.

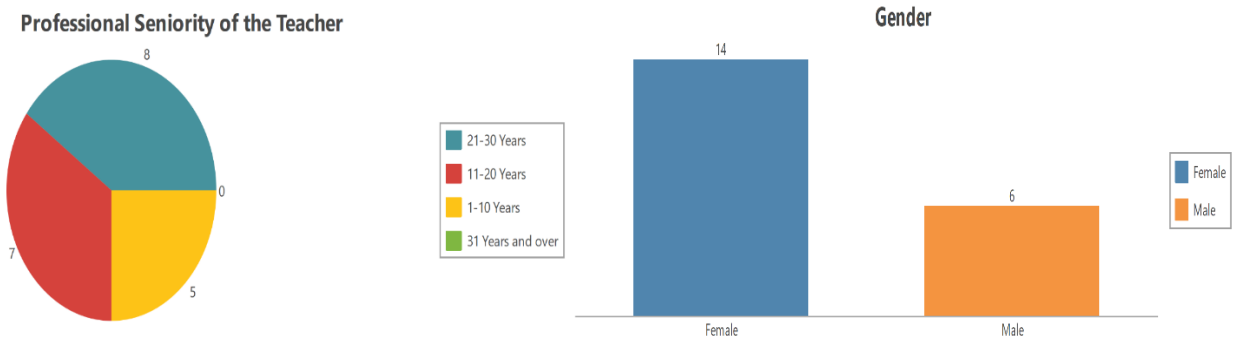

Figure 1. Demographic information of the teachers participating in the study group

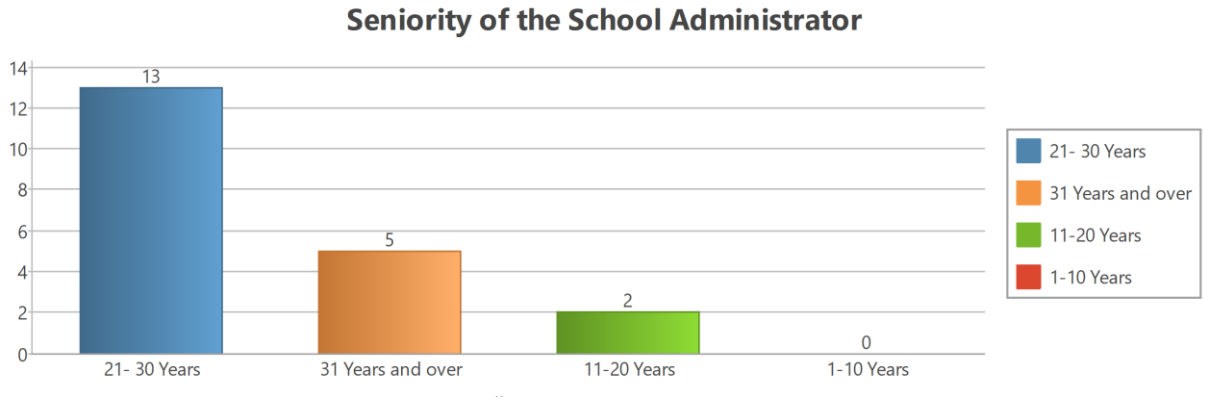

Figure 2. Demographic information of the school administrators of the teachers participating in the study group

As shown in Figure 1, the teachers consisted of 14 women and 6 men. The seniority of 9 teachers participating in the study is 21 years and above, 7 of them are 11-20 years, 4 of them are 1-10 years. In Figure 2, information about the professional seniority of the school administrators of the teachers participating in the study group is given. 13 school administrators' seniority years are between 21-30 years, 5 of them are 30 years and above, and 2 of them are between 11-20 years.

Data Collection Tool

In order to examine teachers' views on the corrosive effect of toxic leadership behaviors of school administrators on teacher accountability, data were collected through a semi-structured interview form. Teachers' opinions were obtained through face-to-face interviews. First, the literature on the subject was reviewed in detail by the researchers. Then, a semi-structured interview form was prepared based on the literature. The questions were examined in detail by taking the opinions of three faculty members who are experts in the field, and the comprehensibility and relevance of the questions were determined. The interview form consists of eight questions:

1.) How would you define toxic leadership? Does your school administrator show toxic leadership behaviors?

2.) What impact do your school administrator's toxic leadership characteristics have on teachers?

3.) How would you define teacher accountability?

4.) How do the toxic behaviors of your school administrator affect your accountability?

5.) To what extent does your school administrator's miscommunication and lack of appreciation as a toxic leader affect your level of internal accountability?

6.) How does your school administrator's toxic leadership affect trust and transparency in your accountability process?

7.) Does your school administrator's resistance to feedback or constructive criticism in your accountability process as a toxic leader affect your academic performance?

8.) What strategies should be implemented to reduce the corrosive impact of toxic leadership on accountability?

Data Collection and Analysis

The research was subjected to an evaluation by using content analysis, one of the qualitative data analyses, with the use of toxic leadership and teacher accountability forms. The main goal of content analysis is to reveal concepts and relationships that can illuminate the data obtained. The basic procedure in content analysis involves classifying similar data under certain themes and interpreting the data within a defined framework that the reader can understand (Ayyıldız & Akın, 2016). The first step in content analysis requires coding the data obtained; this is a comprehensive examination of the data to identify similar sections

and to grasp the conceptual meaning of each section. Then, the codes are divided into certain groups, the data are organized according to the codes and themes, and the findings are interpreted and themes are formed (Yıldırım & Şimşek, 2011).

Face-to-face interviews were conducted with willing teachers in their own schools and voice recordings were taken with the approval of the teachers. The opinions of the students who did not accept the voice recording were noted. In this context, the opinions of 2 teachers were recorded using a voice recording system, while the opinions of 18 teachers were documented in writing since they did not prefer voice recording. The teacher interviews lasted approximately 630 minutes. After the interviews, the author explained the verbal and written opinions of the participant teachers in a computerized format. During the presentation of the findings, the participant teachers were coded as T1- T20 (Teacher 1- Teacher 20). The participants between Teacher 1- Teacher 20 consisted of ten Anatolian high school teachers. The responses obtained were analysed in four stages. These stages are; coding the data, finding the themes, categorizing and defining the data according to the codes and themes, and finally interpreting the findings.

Validity and Reliability Studies

Studies were conducted to ensure the validity and reliability of the research and data analysis stages. In order to increase validity, the data obtained were examined in detail and reported. In addition, direct quotations from the students included in the study were used to increase validity. The possibility of obtaining detailed information about the subject through face-to-face interviews, the possibility of going back for the accuracy of the findings and obtaining additional information also increases the validity rate. Considering the generalizability of the research results to similar environments, it can be said to have external validity (Akın, 2016). In the first stage of the research, codes were created deductively, and then sub-codes were created inductively. In the last stage, categories were formed in line with the codes and sub-codes (Akın, 2016).

As a result of the research, the reliability of the findings was assessed by three experts using the formula suggested by Miles & Huberman (1994): "(Reliability: [Agreement / (Agreement + Disagreement) x 100])". As a result, 90% of the experts agreed and reached a consensus.

FINDINGS

Teachers were interviewed about the corrosive effect of toxic leadership on teacher accountability in schools. Based on the findings of the analysis, the findings from the study were categorized into five main themes about teachers' views on the impact of toxic leadership on teacher accountability.

Figure 3. Word Cloud of Teachers' Views on Toxic Leadership and Teacher Accountability

A word cloud was formed from the most frequently expressed words within the scope of teachers' views on the corrosive effect of toxic leadership of school administrators on teacher accountability. The word "toxic" was repeated 30 times, the second word "negative" was repeated 29 times and the third word "account" was repeated 28 times.

Teachers' Views on Toxic Leadership of School Administrators

Within the scope of the research, teachers working in 10 Anatolian high schools were first asked whether school administrators exhibit toxic leadership behaviors. As presented in Figure 4, a graph was presented in the form of yes or no regarding the toxic leadership of school administrators. In this graph, 16 participant teachers answered no and 4 participant teachers answered yes.

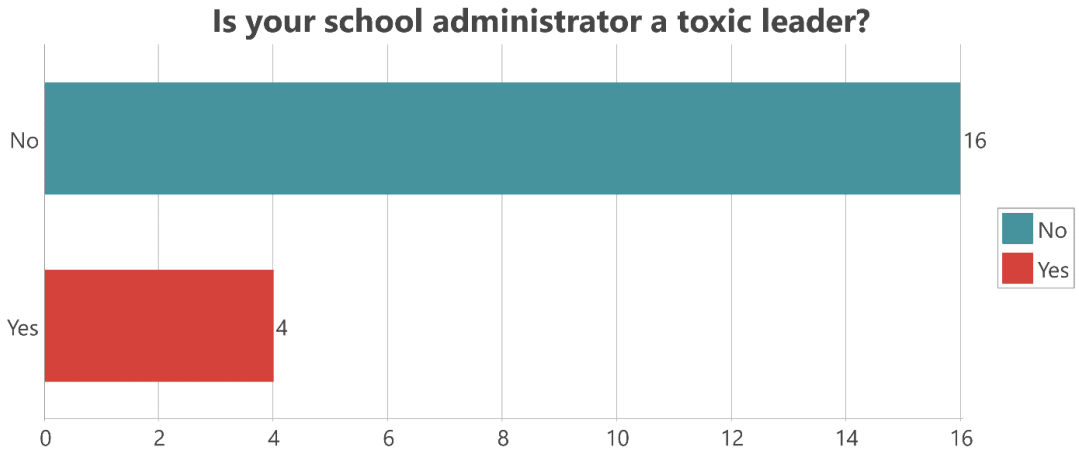

Figure 4. Table Showing Toxic Leadership of School Administrators

According to the results obtained, 4 participants stated that school administrators showed toxic leader behavior. Under the theme of yes, 3 sub-themes were formed. These are controlling, lack of transparency and negative organizational climate. Among the most frequently mentioned topics, there are codes related to school administrators creating controlling and negative organizational climate.

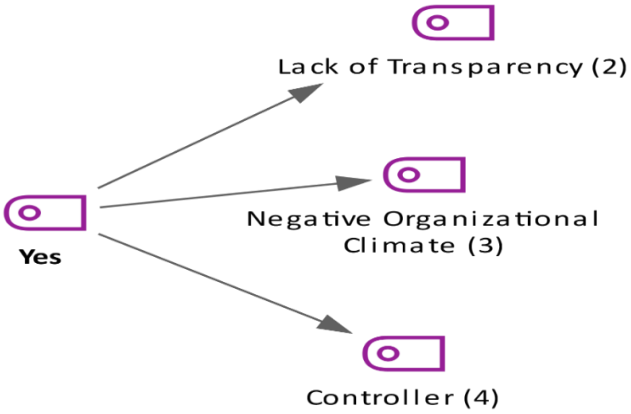

Figure 5. Classification of Teachers' Views on Toxic School Administrators

Below are the codes related to the meanings experienced and reported by the teachers and sample quotations for each code.

Lack of Transparency

As a result of the research, teachers stated that school administrators were not transparent as toxic leaders and some issues were kept secret. Teachers shared their experiences about this issue as follows:

"I think he is not transparent, some things are kept secret, and he does not share them with us." (T1)

"I think it is not transparent, it is not clear enough." (T11)

Negative Organizational Climate

Teachers stated that school administrators created a negative organizational climate by showing toxic behaviors, harmed the cooperation between school stakeholders and engaged in offensive behaviors. Teachers' views on this issue are as follows:

"Due to excessive supervision, it does not have an equal effect on the employees and causes deepening of groupings in the environment. It disrupts the relationship between friends and tries to isolate people." (T1)

"It has a negative effect. They show offensive behaviors in public. This affects the working environment negatively." (T13)

Controller

Within the scope of toxic leadership behavior, teachers stated that school administrators behaved in a controlling manner the most. They stated that school administrators intervene in everything from the teachers' entry and exit times to the documents they bring to the class and that they do not want any step to be taken without their knowledge. Teachers' views on this issue are as follows:

"We have an overly controlling and perfectionist school administrator. He follows every step we take." (T10)

"He has an attitude that is too interventionist and controlling, and hardens when what he wants is not realized." (T11)

Teachers' Views on the Effects of Toxic Leader Behaviors on Teachers

The questions asked to the teachers about the impact of toxic leadership of school administrators on teachers revealed the codes under the theme of the impact of toxic leadership on teachers presented in Figure 6. These codes were divided into four groups as negative situation and self-regulation. The negative situation sub-theme was also divided into four categories. These are inefficiency, passivity, psychological pressure and alienation. As can be seen in Figure 6, passivity and psychological pressure categories are the most frequently mentioned issues.

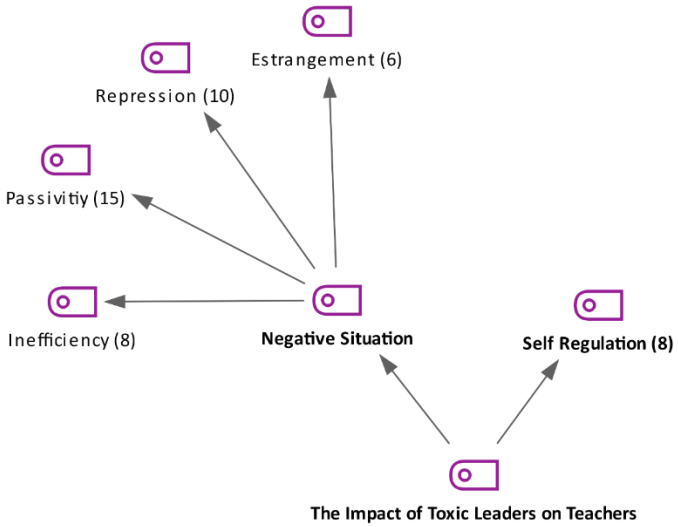

Figure 6. Classification of Teachers' Views on the Effects of Toxic Leaders on Teachers

Negative Situation

Toxic leader behavior can lead teachers to negative situations in many ways. Within the findings, the negative situation theme was divided into four sub-themes; inefficiency, passivity, psychological pressure and not feeling belonging. The most frequently mentioned issue in the negative situation theme is the sub-theme of passivity. Teachers stated that the fact that school administrators were toxic leaders caused reluctance in teachers, decreased commitment to school, unwillingness to work and distancing. Secondly, the sub-theme of psychological pressure was mentioned the most. Teachers stated that they entered into a negative psychological state within the scope of toxic leadership behavior. They stated that they could not be comfortable because they felt that they were constantly under surveillance, that they were humiliated even in a minor incident and that they could not be peaceful for these reasons. In the sub-theme of inefficiency, teachers stated that toxic behavior of school administrators would decrease productivity. They stated that their creativity would be hindered because they would be negatively affected by toxic behavior, they would be timid when implementing a new idea because of toxic behavior, and therefore they would not update themselves. In the alienation sub-theme, teachers stated that they would move away from the school and school stakeholders, become alienated and weaken their sense of belonging due to toxic behaviors. Teacher views on these sub-themes are as follows:

"Since it will create an unhealthy working environment, I will come to school reluctantly and become a teacher who only wants to do his/her job and escape. In the educational environment, especially such situations will primarily affect the students and bring along many negative problems." (T7)

"I definitely do not make an extra effort outside my duty. A teacher has many more duties than attending the lesson. I do not take part in any of these." (T15)

"The fact that teachers and other employees feel that they are under surveillance creates a feeling of psychological pressure and discomfort." (T12)

"I avoid using new methods and techniques in the lesson because it would decrease my motivation. This prevents me from updating myself as a teacher and I cannot provide efficiency to my students." (T3)

"The negative climate of the school environment can reduce my working efficiency, I cannot realize my new ideas and my creativity is hindered." (T1)

"I do not feel that I belong to the school and I move away." (T9)

"I get cold from school. I don't want to come." (T17)

Self-regulation

Some of the teachers, on the other hand, stated that they were not affected by the toxic behaviors of school administrators, that they protected themselves from toxic behaviors and that they were able to re-motivate themselves by self-regulation. Teachers' opinions on this issue are as follows:

"I try to move forward by re-motivating myself in terms of self-renewal, enjoyment (of the work), the pleasure of being able to teach new things to students. If informal accountability provides you with positive feedback, this increases your strength, and you continue on your way." (T1)

"Aiming to fulfil the necessity of the profession by making a logical and conscientious accounting by ignoring the corrosive effect of the toxic leader, not making concessions to the toxic leader." (T8)

Teachers' Perceptions of Teacher Accountability

Teachers' perceptions of the concept of teacher accountability were divided into two sub-themes: internal accountability and external accountability as shown in Figure 7. The internal accountability sub-theme was categorized as conscience. The external accountability category was coded as responsiveness.

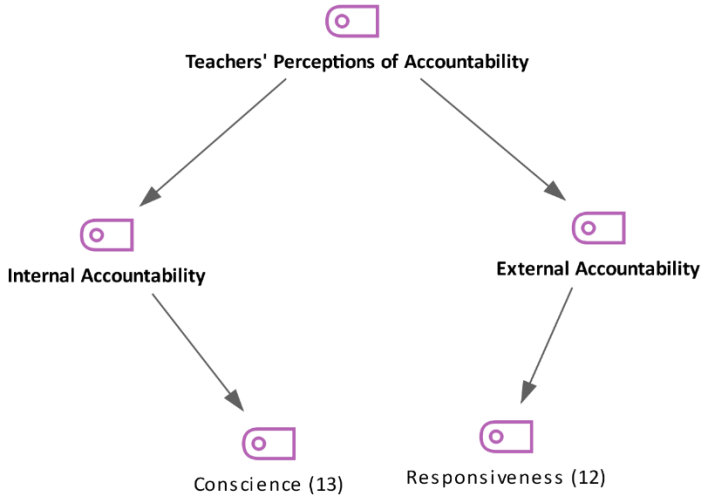

Figure 7. Classification of Teachers' Views on Teachers' Accountability Perceptions

Internal Accountability

The theme of internal accountability was divided into the sub-theme of conscience. Teachers defined the conscience code as being conscientiously comfortable with the behaviors of teachers within the scope of their duties. They mentioned the requirements of their profession and being responsible for student success. Teacher opinions on this theme are as follows:

"First, I am accountable to myself so that my conscience is comfortable. Therefore, whether my school administrator is toxic or not does not affect my accountability at this point."(T4)

"The most beautiful accountability of the teacher is the smiling eyes of the students. I recognize no mechanism other than my conscience." (T15)

"To do his/her job according to the legislation and moral principles and not to refrain from expressing what he/she did and did not do with his/her deficiencies and mistakes when asked." (T11)

External Accountability

The teachers coded the concept of external accountability as responsiveness. They defined accountability as giving an account of what they did to the authority during the supervision. The opinions supporting these ideas were stated as follows:

"Being able to evaluate the results of his/her lessons or social and cultural activities." (T18)

"It is the supervision of a teacher against external authority about his/her lessons and responsibilities and the teacher's ability to respond to these supervisions." (T5)

Teachers' Views on the Role of Toxic Leader in Teacher Accountability

As a result of the findings, teachers' views on the role of toxic leaders in teacher accountability were divided into two themes: negative impact and resilience. As seen in Figure 8, the themes of lack of motivation and insecurity were among the most frequently mentioned issues.

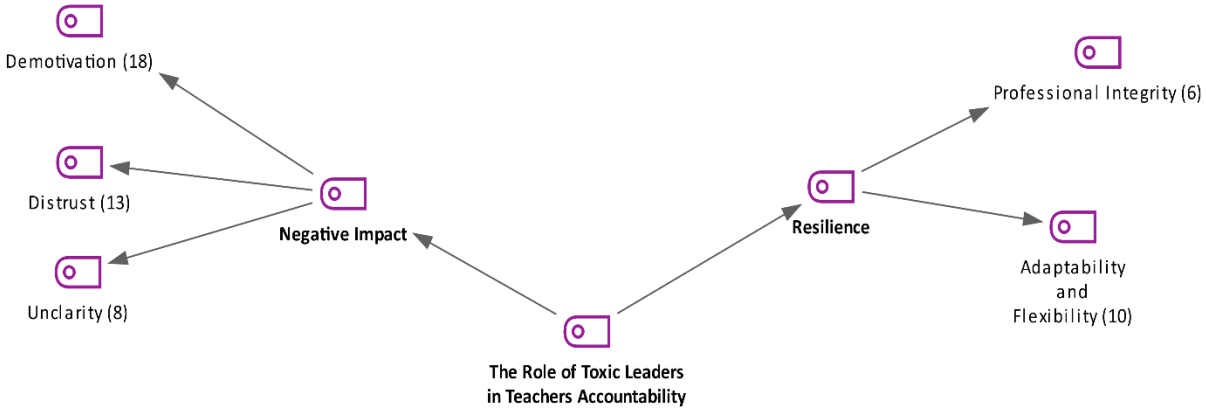

Figure 8. Classification of Teachers' Views on the Role of Toxic Leader in Teacher Accountability

Negative Impact

The negative impact theme was divided into three sub-themes: lack of transparency, lack of motivation and insecurity. Lack of motivation was the most frequently mentioned sub-theme in line with teachers' opinions. Toxic behaviors of school administrators cause a decrease in teachers' motivation. This significantly affects the academic performance of the teacher. It is concluded that they are negatively affected both academically and in terms of classroom effectiveness. The insecurity sub-theme was the second most frequently mentioned issue. Teachers stated that they lost their trust in school administrators in the face of toxic behaviors and therefore did not want to communicate with them. In the sub-theme of not being transparent, teachers stated that they could not be transparent to school administrators in the accountability dimension because they did not trust the toxic leader and could not express everything openly. The opinions supporting these thoughts are as follows:

"Of course it modifies my trust negatively. This increases in proportion to the severity of the negativity experienced. " (Ö19)

"It might have been more difficult to be transparent in the face of school administrators who exhibit pressure and intimidating behaviors. The existence of an environment of mutual trust and confidence in a school can help us to be comfortable and more transparent in the process." (S8)

Resilience

Teachers' views were divided into two sub-themes under the resilience sub-theme: professional integrity, adaptability and flexibility. As seen in Figure 8, adaptability and flexibility were the most frequently mentioned topics. Most of the teachers stated that the toxic behaviors of school administrators did not affect their academic performance and teaching. In this way, it can be concluded that they were able to adapt themselves to the situation and show flexibility. They stated that they further strengthened themselves and increased their accountability dimensions by updating themselves in line with technological developments. As for professional integrity, they stated that working under toxic leadership is emotionally and mentally exhausting, but teachers' continuing to fulfill their duties effectively and fulfilling their obligations internally and externally will increase their resilience and they will be able to stand upright in the face of toxic leaders. Teacher statements supporting the views are as follows:

"As a teacher, I question my accountability not according to a toxic administrator, but within the framework of the rules required by my profession and in a way that I can be accountable to my own conscience." (T8)

"Since I do not do my job for someone else to inspect, the behavior of the toxic leader cannot affect my academic performance and accountability. I do my job." (T18)

"I complete the tasks required by my duty, complete the documents, and do not interfere too much. I take myself under protection." (T6)

Teachers' Views on Strategies to Mitigate the Toxic Leader's Corrosive Effect on Teacher Accountability

The strategies that should be implemented in order to reduce the corrosive effects of school administrators' toxic leadership behaviors on teacher accountability were classified into two themes in line with teachers' views. These themes are self-awareness and legislation. As a result of the interviews, self-awareness was the most pronounced theme.

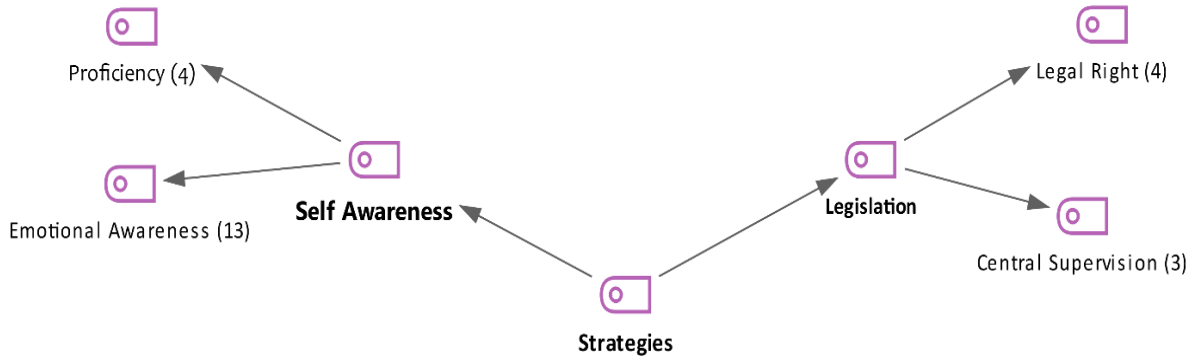

Figure 9. Classification of Teachers' Views on Strategies to Mitigate the Corrosive Effects of Toxic Leaders on Teacher Accountability

Self Awareness

The self-awareness theme was divided into two sub-themes: competence and emotional awareness. The most frequently mentioned theme was emotional awareness. Teachers stated that school administrators should be made emotionally aware of the fact that they show toxic behaviors. They stated that they should be made aware of how to solve this issue and create affective awareness by giving feedback through the questionnaire or by communicating with them and explaining how they behave. They also stated that school administrators should be enabled to empathize and allowed to develop their affective intelligence. In the sub-theme of competence, opinions were expressed that school administrators should create personal awareness by developing themselves not only in cognitive but also in affective terms. Teachers shared their opinions on this issue as follows:

"First, toxic behaviors of school administrators should be prevented, and they should be made aware of this issue. MEB should conduct research on administrator behaviors at certain intervals in schools. Awareness is the beginning of everything. If awareness is created, school administrators can criticize and correct their behaviors. Thus, the corrosive effect can be reduced or eliminated." (T4)

"The competence and emotional intelligence of school administrators are very important not only in terms of legislation but also psychologically." (T13)

"Not everyone should be appointed as school administrators. People who are educated, self-realized and competent in every sense should be brought to management." (T16)

Legislation

The legislation theme consists of two sub-themes: legal rights and centralized supervision. Teachers stated that school administrators showing toxic behavior should be centrally audited by the Ministry of National Education at certain intervals. However, these inspections should not only be documented, but also the psychological soundness of the school administrator should be questioned. In the legal rights sub-theme, teachers expressed the opinion that teachers should know their personal rights well and apply to the necessary authorities when faced with toxic behaviors. In this regard, teachers expressed their opinions as follows:

"First, in order to prevent the emergence of such leaders, a system of checks and balances should be provided. Central control activities should be carried out at certain intervals." (T10)

"It would be a good strategy to know our personal rights and legal obligations well and not to hesitate to seek our legal rights when necessary." (T5)

"The units that will implement this are the higher units. We teachers can only report this to the higher units and seek our legal rights." (T7)

DISCUSSION

Administrators are an important element in shaping the culture and success of educational institutions. However, when leadership becomes toxic, the consequences can be corrosive, especially in terms of teacher accountability. When teachers feel that their leaders are not interested in their welfare or that they are being blamed without taking a broader view, their trust is destroyed. The result is a fragmented school community where collaboration is inhibited and teachers can become reluctant to take risks or share innovative ideas. Toxic leadership, which affects many areas in this way, has a corrosive effect on teacher accountability by creating an atmosphere of fear and vulnerability.

As a result of the findings, it was determined that most of the school administrators did not show toxic leadership and some of them showed toxic leadership behaviors. The behaviors of school administrators as a toxic leader were coded as controlling, lack of transparency and negative organizational climate. Controlling behavior of school administrators creates anxiety and discontentment among teachers. Their controlling nature permeates every aspect of the educational experience, from stifling

academic creativity to inhibiting teacher autonomy. Toxic leaders often show favoritism, creating a climate of competition and resentment among teachers. Personal biases can influence decisions about evaluations, creating a culture of distrust and division within the school community. Toxic leaders who work in secrecy, wield power behind closed doors and keep their followers in the dark demonstrate a deliberate lack of transparency, hiding their goals, decisions and actions from teachers. Lack of transparency fosters speculation, undermines trust and breeds suspicion. Trust, an important element of a successful school environment, is eroded when employees feel they are kept in the dark about decisions that directly affect them. As teachers lose faith in a leadership style that values confidentiality more than openness, their sense of belonging disappears. As toxic leaders, school administrators create a negative organizational climate. Communication breaks down, information flows unidirectional from top to bottom, and employees feel disconnected and uninformed. The lack of open dialogue leads to misunderstandings, rumors and a pervasive sense of uncertainty. Collaboration becomes challenging in this environment where employees are afraid to share ideas or collaborate for fear of punishment. Moreover, toxic leaders often exhibit favoritism and divisive behavior, creating factions within the workforce. This leads to resentment, demotivation, and feelings of injustice, undermining morale and team cohesion. The results of the research reflect the results of previous studies. Dobbs (2014) stated that employees perceived their leaders as exhibiting low levels of toxic leadership behaviors. In another study, when teachers' average perceptions of toxic leadership were evaluated, it was concluded that school principals exhibited low levels of toxic leadership behaviors. Therefore, based on the findings of this study, it can be argued that teachers mostly do not perceive principals' leadership behaviors as toxic. This result overlaps with the results of Demirel's (2015) study conducted with a sample of teachers and is consistent with İzgüden, Eroymak, and Erdem's (2016) study conducted with health personnel. In contrast to these results, Green's (2014) study focusing on toxic leadership in educational organizations revealed that 90% of educators reported that they encountered toxic leaders. When the international literature is examined, it is seen that employees generally perceive their managers as people who exhibit toxic leadership characteristics.

The category of teacher perceptions of the concept of accountability is divided into two codes: internal and external accountability. An important component of intrinsic accountability is not only meeting professional standards or legislative requirements, but also ensuring that teachers fulfill their duties with a clear conscience. A clear conscience in teaching involves making ethical decisions that put the interests of students first. Having a clear conscience also involves a commitment to continuous reflection and improvement. Teachers should regularly evaluate their teaching methods, identify areas for improvement and actively seek opportunities for professional development. This proactive approach helps to ensure that educators remain effective and responsive to the evolving needs of their students. Teachers' transparency in accountability creates an environment where trust flourishes, fostering a sense of shared responsibility for student achievement. Transparent teachers contribute to a positive and collaborative learning community by actively engaging with students, parents and colleagues through open communication and clear practices. Teachers described accountability as being able to answer to external authorities about their authority and responsibilities. Teachers are accountable for their teaching practices and supervision provides a mechanism for administrators or mentors to observe and evaluate these practices. Supervision involves ensuring that teachers comply with school policies, curriculum guidelines and educational standards. Responsiveness to supervision is an important component of teacher accountability and demonstrates a commitment to continuous improvement and a collaborative approach to achieving educational goals. According to Bakioğlu and Sanduz (2014), teachers emphasized that course audits should be conducted by other stakeholders rather than school administrators. Koçak et al. (2012) argued that supervision of teachers from external sources is not sufficient in terms of supervision processes and that it is difficult to adopt such a form of supervision due to the increase in administrative workload. Erdağ and Karadağ (2017) emphasized the importance of active participation of school principals in supervision to instill accountability among teachers. Erdağ (2013) found that the above-mentioned differences in approach are managed differently according to the type of school, and that there is a relationship between the role undertaken and the degree to which the sense of accountability is felt. Himmetoğlu et al. (2017) explained the accountability of school administrators with concepts such as transparency, information provision and responsibility. They also argued that accountability plays an important role in issues such as school choice and success. These findings support the external accountability aspect of the study because in this dimension, teachers basically perceive themselves as accountable with an orientation towards success. Koçak and Sezgin Nartgün (2018) concluded in their study that teachers' perceptions of internal accountability are at the forefront. Similarly, Altıparmak (2019) reported teachers' positive responses to the accountability scale in line with the research results.

The category of teachers' views on the role of toxic leaders in teacher accountability was categorized as negative impact and resilience. The negative impact code was sub-coded as lack of transparency, lack of motivation and insecurity. Teachers stated that school administrators could not be open and clear in the face of toxic behaviors and could not express everything transparently. In addition, it was observed that teachers' motivation decreased as a result of destructive and negative criticisms of toxic leaders. Without a foundation of trust, teachers can become demoralized and less responsible for their actions. The resilience code refers to educators' ability to maintain commitment to their professional responsibilities, adapt to challenging circumstances, and persevere in the face of unfavorable leadership conditions. Resilient teachers maintain their professional standards and ethical principles even in the face of toxic leadership. Resilient teachers show adaptability and flexibility in their teaching approach. It can be interpreted that despite toxic leadership, they find creative ways to overcome challenges, adjust their strategies and meet the needs of their students while taking responsibility for their role. According to the conclusion reached,

leadership types have various effects on teacher accountability. Kandemir and Akgün (2019) concluded that the presence of servant leadership qualities in a school administrator encourages a positive impact on the school environment by leading to increased accountability among teachers.

The category of teacher views on strategies that should be implemented to reduce the corrosive effect of toxic leader behaviors on teacher accountability was divided into two codes. These codes are personal awareness and legislation. Increasing personal awareness of toxic leaders in schools is crucial to empowering educators to recognize, respond to, and deal with toxic leadership behaviors. Organizing workshops and training sessions to educate school administrators on the characteristics of toxic leadership, and raising their awareness with examples and case studies to help them understand how toxic leadership can manifest in educational settings was emphasized. In addition, establishing a formalized feedback mechanism for teachers on their leadership practices and regularly reviewing this feedback to identify patterns and areas for improvement is identified as an element that can help reduce the corrosive impact on teacher accountability. Teachers expressed the need for legislation to provide legal recourse for teacher accountability that is undermined by toxic leadership. This should include the ability to file a complaint, seek compensation, or take legal action against leaders who engage in harmful behavior. Legislation should outline a process for institutions to intervene and provide support or oversight where toxic leadership is identified. It is important to note that the effectiveness of legislation depends not only on its content but also on implementation, enforcement and ongoing evaluation. Teachers, administrators, policymakers, and community members collaborating to ensure that legislation effectively addresses and prevents toxic leadership in educational settings is interpreted as helping to reduce the corrosive impact of toxic leaders on teacher accountability. In Kandemir and Akgün's (2019) study, it was stated that school administrators have a positive impact on the school when they exhibit behaviors such as accepting that their authority stems from their position rather than their personal identity, seeing themselves as equal to others, and avoiding seeing themselves as more talented than their peers. Salduz (2013) emphasized in his study that it is very critical for school administrators to initiate transparent and effective communication in order to increase teachers' dedication.

CONCLUSION

The research showed that teacher accountability is a critical element for educational quality and student achievement and can be threatened by toxic leadership. It has increased awareness of the concept of accountability and raised consciousness about the need to protect this concept. Overall, our study highlights the critical role of leadership behaviors in education for the Turkish education system and reveals how significant avoiding toxic leadership is for teacher performance and student achievement. It reveals that toxic leadership has a devastating impact on teachers, severely damaging their motivation, professional commitment and thus their accountability. Under toxic leadership, teachers face negative experiences such as exclusion from decision-making, constant criticism and feelings of worthlessness. This reduces teachers' willingness to take responsibility for the success of their students and jeopardizes the quality of education. Teachers reported a lack of trust and support under toxic leadership, weakening their commitment to maintaining professional standards and providing the best education for their students. These results suggest that the quality of leadership in the education system has a direct impact on teachers' accountability. Therefore, establishing a culture of positive leadership and supportive management in educational institutions is a critical requirement to increase teacher accountability and improve the overall quality of education.

RECOMMENDATIONS

To combat the harmful effects of leaders who lack transparency, organizations need to prioritize a culture of openness and accountability. Leaders must actively share information, encourage dialogue and embrace feedback as a catalyst for growth. By fostering an environment where transparency is valued, organizations can break down the barriers created by toxic leaders and pave the way for a healthier, more collaborative workplace. By doing so, they can rebuild trust, empower their teams and lead the organization towards a more transparent and sustainable future. To counter the corrosive impact of toxic leadership on teacher accountability, it is imperative that educational institutions prioritize a culture of support, open communication and empathy. Leadership development programs should emphasize the importance of emotional intelligence and creating a collaborative and positive work environment. By fostering a climate where teachers feel valued, heard and empowered, educational institutions can reduce the harmful impact of toxic leadership and enable teachers to fulfill their important role in shaping the next generation.

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Statements of publication ethics

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

Researchers' contribution rate

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

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It has been approved with the decision of Süleyman Demirel University Social and Human Sciences Scientific Research and Publication Ethics Committee, numbered 149/ 33 and dated 20.05.2024.

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